

The Candy Manufacturer

A Technical and Commercial Magazine for Manufacturing Confectioners Exclusively
Published by THE CANDY MANUFACTURER PUBLISHING CO., Stock Exchange Bldg., Chicago

Vol. II

AUGUST, 1922

No. 7



IN THIS ISSUE

What Is Corn Syrup and What Is Glucose?

Their Definition and Nutritional Value
DR. WILLIAM P. CUTLER

II—Food Flavors—Their Source and Composition

DR. J. W. SALE AND DR. W. W. SKINNER

III—Air Conditioning and Refrigeration

A. W. LISSAUER

IV—Edible Gelatin—Chemical and Bacteriological Analysis

DR. R. H. BOGUE

The Candy Day Campaign

V. L. PRICE

The Sugar Situation

DWIGHT O. PALMER

Imported Nut Situation

H. A. WOOD

Pass The Candy Manufacturer around

After reading forward to:

Superintendent

Chemist

Producing Dept.

Sales Manager

Return to

Read wherever good candy is MADE



DELFT

The World's Best Food Gelatine

HAROLD A. SINCLAIR, 160 Broadway, NEW YORK

"Price is a relative term—Quality always a concrete fact"

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Points Now Acknowledged by Leading Consumers Who Analyze and KNOW Gelatine

1. Extraordinary Uniformity of Delft Gelatine

Goods standardized packed and sealed at the works, delivered to you in perfect condition in original sanitary barrels of special construction.

2. Highest Strength and Purity

Not only meets the requirements of State and National Pure Food Laws, but is even purer than any of them demand.

3. Absolute Freedom from Liquefying and Harmful Bacteria

No tariff changes will curtail supplies, nor affect present reasonable prices.

Members: National Confectioners' Association, Midland Club, Chicago Association of Commerce.
Applicant for Membership in Audit Bureau of Circulation.

The Candy Manufacturer

Registered, U. S. Patent Office

"READ WHEREVER GOOD CANDY IS MADE"

*A Specialized Technical and Commercial Magazine for Confectionery
Superintendents, Purchasing Agents and Executives*

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PUBLISHED MONTHLY BY

THE CANDY MANUFACTURER PUB. CO., Inc., Stock Exchange Building, CHICAGO

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Subscription Price, \$3.00 the year. \$10.00 for 5 years. Single Issues, 50 cents.

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Vol. II

AUGUST, 1922

No. 7

PURPOSE

The purpose of THE CANDY MANUFACTURER is to provide a medium of constructive service and communication between manufacturing confectioners exclusively, a high-class specialized business magazine devoted to the problems and interests incident to the manufacture of confections and the management of a candy factory.

POLICY

THE CANDY MANUFACTURER, being a highly specialized publication, is edited in the interest of the executive, the purchasing agent, the chemist and the superintendent exclusively, and provides a medium for the free and frank discussion of manufacturing policies and problems, methods and materials.

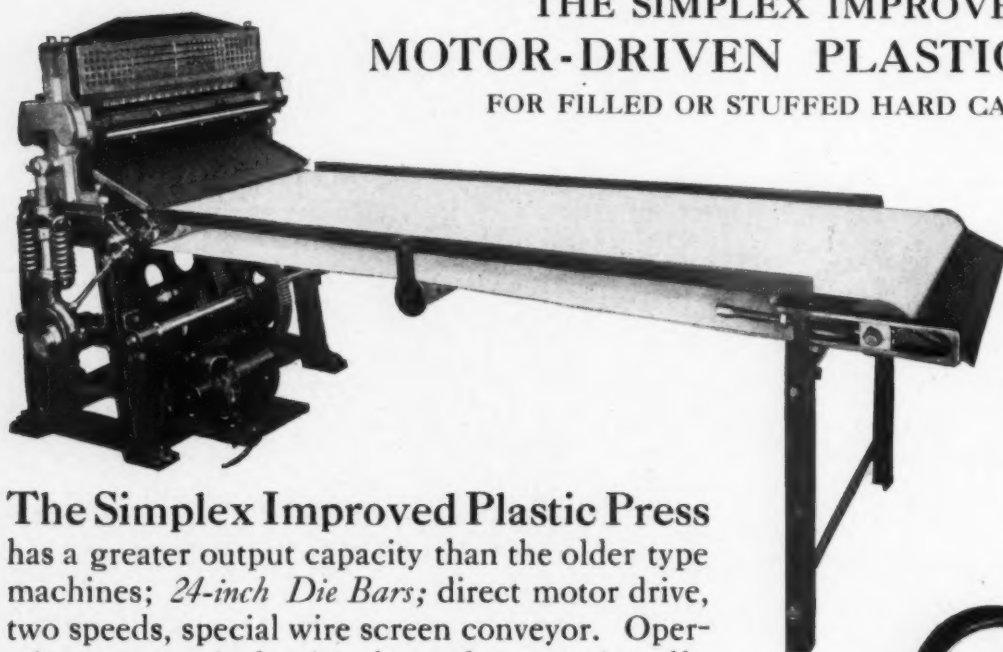
The same corresponding policy applies to the advertising pages which are available only for a message directed to manufacturing confectioners and relative to a reputable product or service applicable to a candy factory.

The Candy Manufacturer believes in

1. A Technical Candy School or Institute.
2. A Uniform Method of Standardized Cost.
3. Maximum Labor and Machine Efficiency for an Equitable Wage.
4. The endorsement and adoption of The National Standard Catalogue Size, Invoice Form and Coal Contract.
5. A National Council of Confectionery Superintendents representing local and territorial organizations.

DO NOT CONFUSE The Candy Manufacturer with other publications with similar names published in Chicago. Be sure of our street address, please: 30 North La Salle Street, Stock Exchange Bldg.

THE SIMPLEX IMPROVED MOTOR-DRIVEN PLASTIC PRESS FOR FILLED OR STUFFED HARD CANDIES



Our
Motor-Driven
Sizing Machines
Insure Greater
Production and
Accuracy

The Simplex Improved Plastic Press has a greater output capacity than the older type machines; *24-inch Die Bars*; direct motor drive, two speeds, special wire screen conveyor. Operation economical, simple and exceptionally accurate—every machine given a practical test before shipment.

An assortment of popular dies included with every press. No extra charge.

Simplex Vacuum Cooker

Cooks Straight Sugar (Refined or Raw) Perfectly
Cooks

ANY PERCENTAGE OF CORN SYRUP

Makes a clearer, a drier and more lustrous satin finish candy

Costs Less to Cook a Batch—Less Fuel More Vacuum

Capacity Simplex Gas Vacuum, 3400 lbs. Per Day
(With extra melting kettle.)

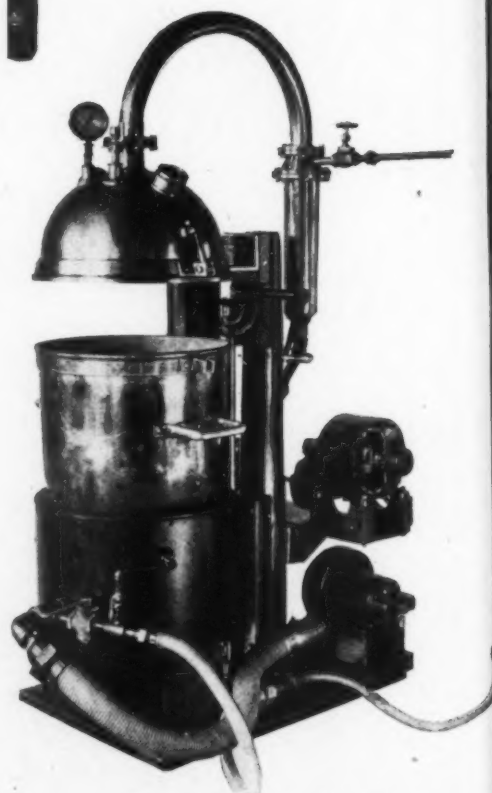
ALSO

Simplex Steam Vacuum Cooker
5000 pounds per day, guaranteed

VACUUM CANDY MACHINERY COMPANY

JERSEY CITY, 74 Pearl Street

SIMPLEX GAS VACUUM COOKER
(Process Pat. June 30, 1914)



326 W. Madison Street, CHICAGO

INDEX TO

The Candy Manufacturer's Approved Advertising of Confectioners' Machinery and Supplies and Miscellaneous Advertising Directed to Manufacturing Confectioners'

POLICY: THE CANDY MANUFACTURER is essentially a manufacturers' publication and therefore is a logical advertising medium only for confectioners' supplies and equipment. The advertising pages of THE CANDY MANUFACTURER are open only for messages regarding reputable products or propositions of which the manufacturers of confectionery and chocolate are logical buyers.

This policy **EXCLUDES** advertising directed to the distributors of confectionery, the soda fountain and ice cream trade. The advertisements in THE CANDY MANUFACTURER are presented herewith with our recommendation. The machinery equipment and supplies advertised in this magazine, to the best of our knowledge, possess merit worthy of your careful consideration.

CANDY AND CHOCOLATE MACHINERY FACTORY EQUIPMENT

Baker Ice Machines.....	45
Ball and Dayton Cream Beaters.....	Back Cover
Bucyrus Copper Kettles.....	45
Carver Cocoa Presses and Accumulator System.....	41
Devine Continuous Vacuum Cookers.....	12
Ekco Candy Pans.....	47
Eppelsheimer Chocolate Molds.....	49
Greer Chocolate Drying and Packing Machines.....	28-29
Improved Simplex Plastic Press.....	4
Marvel Cherry and Nut Depositor.....	51
Mills Automatic Caramel Cutting Machine.....	8
Mills Power Drop Frame Hard Candy Machine.....	8
Read's Mixing Machinery.....	46
Saxmayer Tying Machine.....	48
Simplex Vacuum Cooker.....	4
Springfield Depositor.....	7
Sturtevant-Fleisher Air Conditioning System.....	9
"Thrift" Confectioners' Furnace.....	44
Vienna Plastic Machine.....	12-13

CONFECTIONERS' SUPPLIES

RAW MATERIALS

Amaizo Corn Syrup and Starches.....	52
American Coconut Butters.....	14
American Sugars.....	48
Clinton Corn Syrup.....	43
Crystal Confectioners' Corn Syrup.....	52
Franklin Sugars.....	46
Haehnlen's Chocolate Hardener.....	42
Kay-White Caramel Paste.....	47
Kokoreka, Plastik, Parasub, Ko-nut (Coconut Butters).....	6
Nulomoline.....	49
Nucoa, Nucoline, Plastic Nucoline, Kandex.....	10
Spencer Importing Co., Shelled Nuts.....	50
Thurston and Braidich—Gums and Vanilla Beans.....	44

Flavors

Amora Flavors.....	38
Bush's Maple Flavor No. 1617, Butter W1079, Raspberry "Valex".....	50
CXC Natural Fruit Flavors.....	45

Frozen Pudding Flavor.....	47
Homosols.....	38
Hudson Vanilla Flavor No. 52.....	Third Cover
Ozone-Vanillin.....	16
Ungerer's Fruit and Floral Flavors.....	16
Vanillin Monsanto, Coumarin-Monsanto.....	34

Chocolate

Baker's Chocolate Coatings, Liquors and Cocoa.....	44
"Fortune" Chocolate Coatings and Liquors.....	36
Stollwerck Coatings.....	18
Warfield Chocolate Coatings, Liquors and Cocoa.....	42

Gelatin

Atlantic Gelatin.....	37
"Delft".....	Second Cover
Duche's Dagger Brand Gelatin.....	43
Essex Gelatin.....	39
Milligan & Higgins Gelatin.....	51
Ucopco Gelatin.....	15
"U. S. Gel".....	27
Whitten's Gelatin.....	50

For the Package and Bar Goods Departments

Bendix Specialties, "Bendiphane" Glassine, etc.....	52
Conley Foil.....	52
Duplex Seal.....	11
H. Schultz Boxes.....	34
National Cans.....	45
"Uppressit" Glass Jar Caps.....	47

MISCELLANEOUS

Candy Manufacturer's Buying Guide and Year Book...	30
--	----

Brokers

Dwight O. Palmer—Sugar.....	49
Marcone & Company—Cocoa Beans and Cocoa Butter.....	49

Consulting Chemists

Frederic W. Murphy Laboratories.....	44
Schwartz Laboratories.....	51

Send for this literature—

It gives practical recipes which have been tested and proven by successful confectioners.

It will help you make the best candy,—

So will

KOKOREKA

For Chocolate Coatings and Caramels

PLASTIKO

For Fillings

PARASUB

For Easter and Penny Goods



Our practical demonstrators "Armitage" and "Hickey" are in the field constantly, working with the superintendents and practical men of the candy factories. This is part of our service. Can we be of service to you?

Write for free samples and booklet—"Science in Confectionery," also for our new special literature "Uses and Abuses of Chocolate Coating," "How to Salt Peanuts" and "Popping Corn with Ko-Nut."

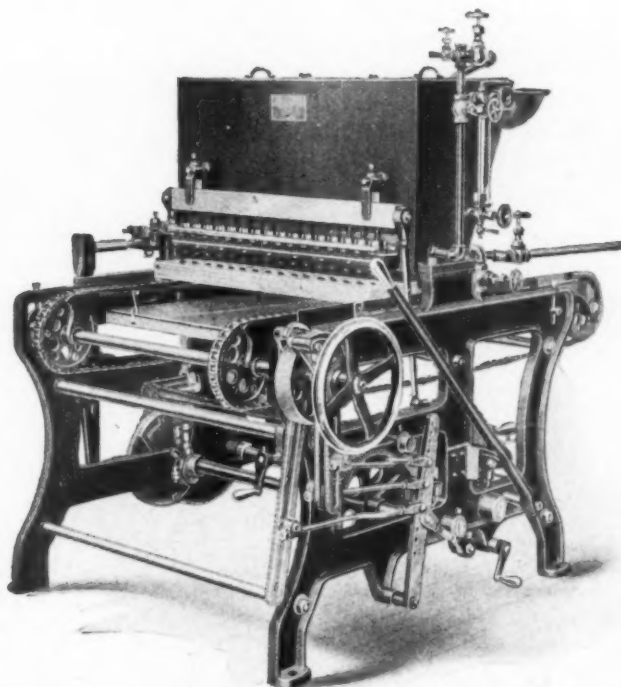
INDIA REFINING CO.

McKeen and Swanson Streets
PHILADELPHIA

Stocks Carried in All Principal Cities

Springfield Depositor No. 2

for marshmallow, cream and gum work



It is conservatively estimated that 85% of the marshmallow, cream and gum work manufactured in the U. S. is produced on this machine.

By merely changing the pump bars, the Springfield Depositor No. 2 will deposit centers varying in size from a jelly bean to a large mint. Can be equipped with a drag motion, for long bar work, at a slight additional cost.

*It will help to deposit money in your bank.
Write for illustrated pamphlet.*

NATIONAL EQUIPMENT COMPANY

Largest Manufacturer of Candy and
Chocolate Machinery in the World

SPRINGFIELD, MASS.,

U. S. A.

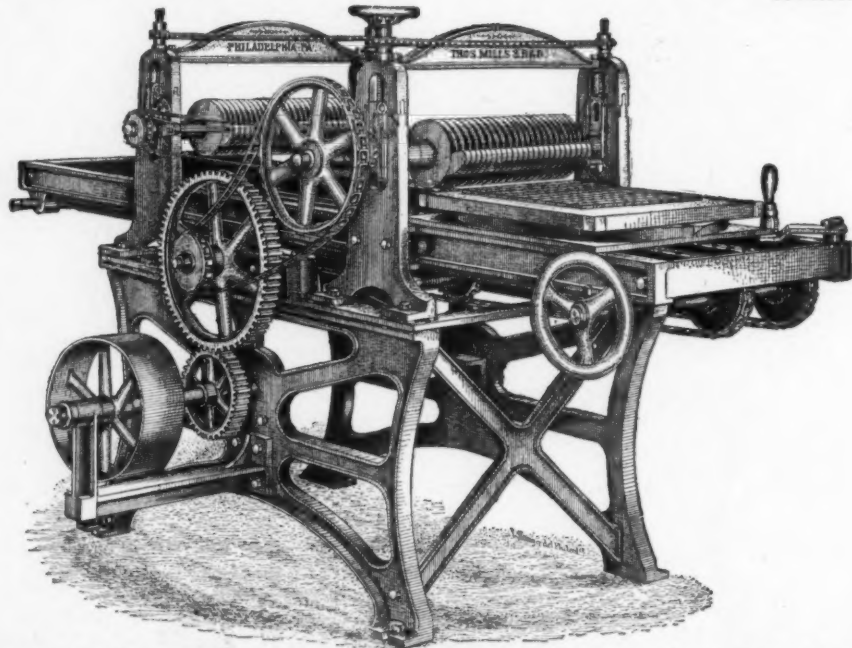
THOS. MILLS & BRO., Inc.

Established 1864

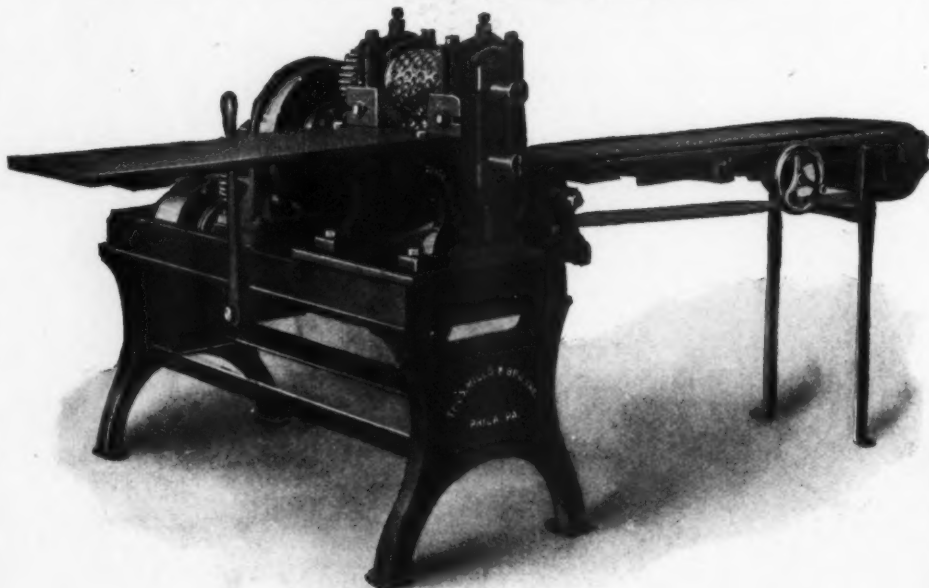
CONFECTIONERS' TOOLS AND MACHINERY

1301 to 1315 North Eighth St.

PHILADELPHIA, PA.
STATION O



Automatic Caramel Cutting Machine—Cuts Both Ways in One Travel of the Bed, Used in Leading Factories for Caramels, Coconut Blocks, Etc., Send for Circular.



Large Power Drop Frame with Stand and Endless Belt Conveyor; Our Latest Type for Large Output and Heavy Duty.

WHEN IN
CHICAGO



VISIT OUR
BOOTH 32

Our Catalog "O" Should Be in the Hands of Every Factory Superintendent; Sent on Application. Please Mention "The Candy Manufacturer" It Helps.



How the Candy Manufacturer turned a Million Dollar Loss into a Million Dollar Profit

By reproducing the Ideal Day 365 days in the year



OUR ENGINEERS were called into consultation with one of the largest manufacturers of hard candies in this country. He had orders that had to be delivered and the hot, sultry summer weather made it impossible for him to operate.

It cost him just \$15,000 for every day his plants were shut down, and he wanted to turn that loss into a profit. He wanted to operate his plant 365 days in the year.

Our engineers went over his New York plant. They recommended the proper equipment, and they **GUARANTEED** the results.

Were the results satisfactory?

The answer is found in the fact that he had us equip his western plant a few months later.

What we have done for this candy manufacturer, we have done for many others, and we can do the same for you.

Pick out the ideal day for operating your factory and we will **GUARANTEE** to reproduce it 365 days in the year.

It will pay to investigate.

B. F. STURTEVANT CO.

Hyde Park, - - - Boston

NOTE—The photo shown here is the Air Conditioned Packing Room of his western factory.



W. L. FLEISHER & CO., Inc.
NEW YORK CITY
Design and Install all
STURTEVANT-FLEISHER
Air Conditioning Systems



Sturtevant
PUTS AIR TO WORK



Every Caramel Man Has a Problem

The "Caramel Complex" they call the universal caramel trouble. But every problem has a solution and the answer to the caramel problem is

KANDEX

Guaranteed to produce a "good eating" caramel that will not squat or leak whatever the heat—whatever the humidity—a caramel that stays firm, shapely, yet soft at 120° F. and 85° humidity.

KANDEX

was the big hit of the big Chicago show. Several hundred samples have been distributed. From practically every sample has come an order. The majority of the trial orders have resulted in repeat orders. This is the biggest record a product has ever made. It proves **first**—the crying need for such a product as Kandex. **Second**—that Kandex fills the need.

What Kandex is

Kandex is an absolutely pure—absolutely healthful product consisting mostly of protein and fat—just the two ingredients you are looking for when you buy a milk product. One pound of Kandex contains 4 times as much protein as 1 pound of condensed milk.

Kandex is not an experiment. It has been proved **scientifically** sound—**practically** perfect.



Special Notice to Caramel Paste Manufacturers—

Kandex is just what you've been needing for years. It is bound to mean increased business for you and less manufacturing cost.

Write today for free sample of Kandex and circular describing its uses fully.

THE NUCOA BUTTER COMPANY

NUCOA BUILDING

293 Fourth Avenue

New York



How large is your Hard Candy Business?

HOW much larger would it be if every new sale made a repeat customer?

If your candy deteriorates, dries out or grains off, *your customer blames you.*

Did you ever think of the Duplex Seal Service in this light—how your customer's good-will, your repeat business depends on the protection you give your product *after* your customer opens it?

The Duplex Seal is the simplest and most positive seal made. Off with a quarter turn of the wrist, on again with the same easy motion

and yet—reseals the bottle or jar perfectly every time.

Leading candy manufacturers—Page & Shaw, Apollo, Crate, Henry Heide, United Retail, and others have adopted the Duplex Seal for hard candies. It keeps out air, moisture and the usual candy deterioration.

Most glass manufacturers are equipped to meet your requirements with the Duplex Seal.

* * *

Interesting information regarding the glass package art, artistic Seal designs, Seal liners to meet special chemical reactions, etc., gladly furnished by our Service Laboratories to manufacturers of hard candies. Our catalog is interesting.

The **Duplex Seal** A PERFECT SEALING & RE-SEALING CAP FOR GLASS BOTTLES & JARS

NATIONAL SEAL COMPANY, Inc.,

Executive Offices - 14th Avenue and 36th Street, Brooklyn, N.Y.
Works - BROOKLYN, N.Y. • • PORTLAND, ME

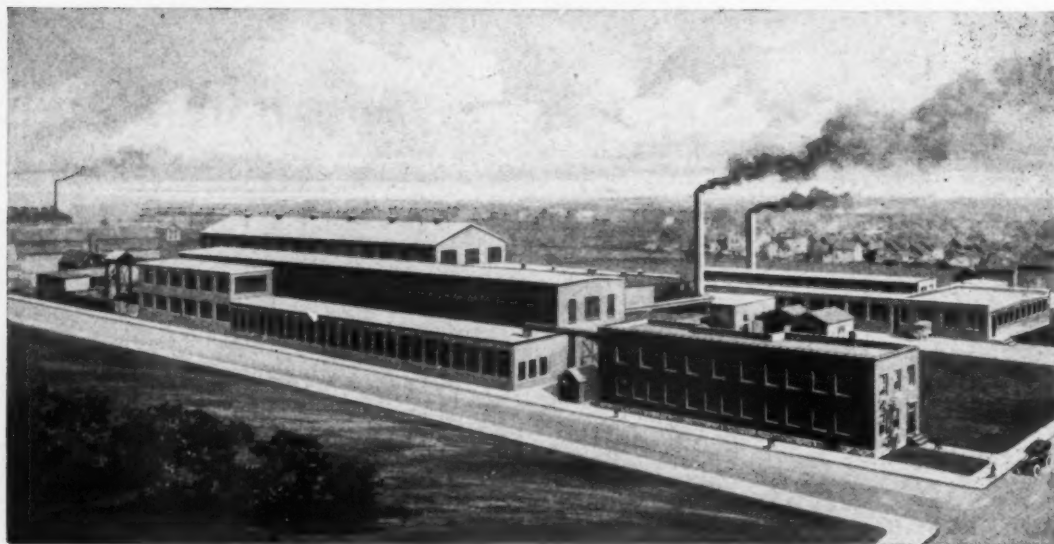
815 Merchants National Bank Bldg., San Francisco, Calif.
Webster Bldg., 327 S. La Salle Street, Chicago, Ill.

Liberty Central Building, St. Louis, Mo.
Newport Bldg., 68 Devonshire St., Boston, Mass.

Duplex Seals manufactured and sold in Canada by The Canadian Bond Crown Co., Ltd., 75 Panet St., Montreal

Devine Continuous Vacuum Cookers

Steam Jacketed or Gas Heated



Plant of J. P. Devine Co., Buffalo, New York.

Cooker furnished complete with two Tilting Kettles, Swinging Vacuum Dome, Condenser and Motor-driven Vacuum Pump, all mounted on Continuous Cast Iron Base Plate, ready for steam, water and wiring connections.

Extra high Steam Jacket.

Each Kettle alternately used as Melter and Vacuum Cooker, without transferring syrup, preventing grained and cloudy batches.

Capacity, 200 lbs. per charge.

J. P. DEVINE CO.

BUFFALO, NEW YORK

SELLING AGENTS:

Special Machine Company

39 Cortlandt Street, New York City

The Devine Line of Candy Machinery

DEVINE CONTINUOUS VACUUM COOKERS

Steam Jacketed or Open Fire

DEVINE 5-ROLL and 3-ROLL STEEL REFINERS—LARGE CAPACITY

52" x 22"

51" x 20"

40" x 16"

COMPLETE PROCESS FOR THE EXTRACTION OF 98% PURE COCOA BUTTER

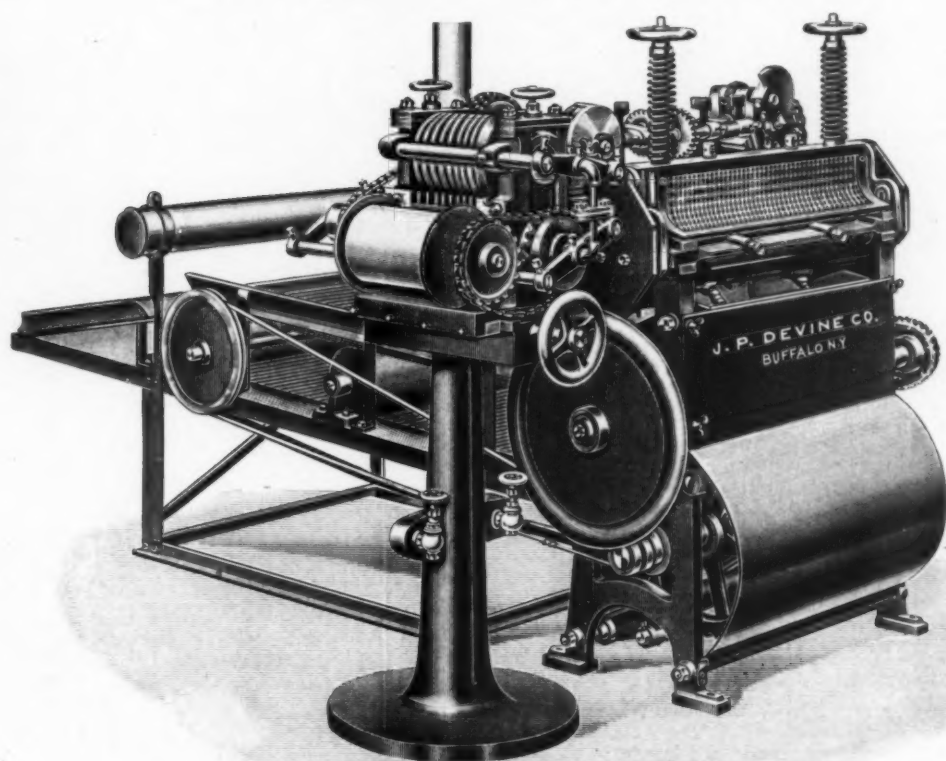
COMPLETE PROCESS FOR THE RECOVERY AND DRYING OF MOULDING STARCH

THE DEVINE-VIENNA STANDARD PLASTIC PRESS FOR FILLED CANDIES

Clear or Satin Finish

THE DEVINE-VIENNA PLASTIC AUTOMAT

An ingenious combination of Sizer, Press, Conveyor and Cooler



DEVINE TRIPLE HAND-HAMMERED COPPER KETTLES

DEVINE VACUUM PANS

DEVINE VACUUM DRYERS AND EVAPORATORS

LONGITUDINAL CONCHES OF LARGE CAPACITY.

SPECIAL MACHINE COMPANY

39 Cortlandt Street

NEW YORK CITY

Selling Agents for J. P. DEVINE CO.

Chicago Representatives — W. & N. HOLMAN, Permanent Confectionery Exhibit, Wrigley Building

The Mark of Quality Coconut Products



"They Belongs to the Quality"

That's what the old-time darkeys used to say of well-born southerners. It meant good birth, good breeding, people of refinement who had family traditions of honor—high ideals—and who lived up to them.

By these same tokens AMERICAN COCOANUT BUTTERS **belong to the Quality**. They're "well-born"—being from the finest cocoanut palms in Manila.

They're "well-bred"—being pressed from scientifically dried cocoanut meat in our own San Francisco plant, shipped in our own cars and **refined** at our own plant in Chicago.

American Cocoanut Butters have been serving Quality manufacturers for nearly a quarter of a century and they have family traditions and honor to live up to.

That's why you can always count on them to be Quality and to maintain Quality for you.

ACOMO

For chocolate work, Caramels, Nougats, Fudges and Butter Scotch.

ACOMINE

For Kisses, Salting Nuts, Slab Dressing, Pop Corn Confections and Fillers for Hard Candies.

MAROKO

For Layer Caramels or Nougats and as Fillers for Delicate Wafers.

SAMPLES ARE YOURS FOR THE ASKING

American Cocoanut Butter Company

Also Makers of ACOCOAT and ACOSSET

CHICAGO

127 N. Dearborn St.

NEW YORK

297 Fourth Avenue



To insure prompt service, complete warehouse stocks are maintained at the principal distributing centers.

Ucopco
Pure Food
Gelatine

**"Open Your Mouth and
Shut Your Eyes"**

You, too, will be agreeably surprised at the improvement in your Marshmallow pieces when you start using UCOPCO Gelatine.

Their meaty body and fluffy tenderness immediately popularize them.

Then—with eyes wide open, the consuming public will look for your package and your trade name.

The United Chemical & Organic Products Co.
4200 S. Marshfield Ave. 401 E. 45th Street
Chicago, Ill. New Orleans, La. New York City

*"UCOPCO Comes Sealed
in Red Drums"*

Ucopco Pure Food Gelatine

Flavor Value

Value is not composed of a single element; mathematically speaking, it is a function of both price and quality; it can only be computed on the basis of price paid and quality received.

The wise buyer of flavoring ingredients confines his purchases rigidly to sources of supply which guarantee him the maximum return in value, the most economical co-ordination of price and quality.

Flavoring materials recommended by the House of Ungerer meet this requirement to the complete satisfaction of the most exacting purchaser.

We urge exhaustive test of our

OZONE-VANILLIN

OIL PEPPERMINT

OIL WINTERGREEN

OIL ORANGE ITALIAN

OIL ORANGE WEST INDIAN

OIL LEMON SUPERFINE

SIMILE FRUIT ESSENCES

NATURAL FRUIT FLAVORS

CONFECTIONERS' FLORAL FLAVORS

"Our Quality Is Always Higher Than Our Price"

UNGERER & CO., New York

124 West Nineteenth Street

CHICAGO
189 No. Clark Street

PARIS, FRANCE
11 Rue Vezelay

CANDY DAY—October 14th

Campaign Supplies Now Ready for Distribution to Your Retailers



The Retailer Is the Most Important Factor in the Success of Candy Day—

by V. L. Price

Director of Publicity, National Confectioners' Association

THE Executive Committee of the National Confectioners' Association has set Saturday, October 14th, 1922, as the date for observance of CANDY DAY throughout the United States.

The impetus given to candy sales on special occasions like Christmas and Easter has demonstrated beyond doubt that the candy buying public can be stimulated to buy candy beyond their daily habits by creating some incentive to buy through the suggestive force of a particular day, this being done by exploiting the day and by creating special goods to fit the season.

In addition to Christmas and Easter there are already evidences of cashing in on such occasions as Washington's Birthday, St. Valentine's Day, Fourth of July and Hallowe'en. Many manufacturers, through the means of special goods and special assortments, backed up by proper advertising for use by the retailer, have made these days productive of large added sales for themselves and the dealer.

It is well known that the candy business is a seasonable business, and it is seasonable because the dates upon which the public is stimulated to buy candy beyond their normal wants are so few and far between. The florists had the same problem Easter and Christmas, and

they created Mother's Day in May when flowers were plentiful and with no special demand for them. This act on their part brought another season to their industry, and a big one.

One valuable feature of CANDY DAY is that it does not require special kinds of candy. Any kind of candy can be sold on CANDY DAY.

CANDY DAY has been observed by the industry in many sections of the country during the past few years, and with big results, but the opportunities of CANDY DAY have been neglected by many, because of the tendency on the part of some failing to appreciate the value of the idea.

The co-operation of the retailer is absolutely necessary in putting CANDY DAY over on a big scale, and, as the retailer sells the products of the manufacturer, it is up to the manufacturer, either directly to the retailer or through the jobber, to supply the retailer with the advertising matter necessary to enable the retailer to do his part.

The Publicity Department of the National Confectioners' Association, has arranged and created advertising matter for use by the retailer in his store and on his windows, and it is expected that manufacturers will purchase same and furnish it free of cost to jobbers and retailers.

(Continued on page 23)

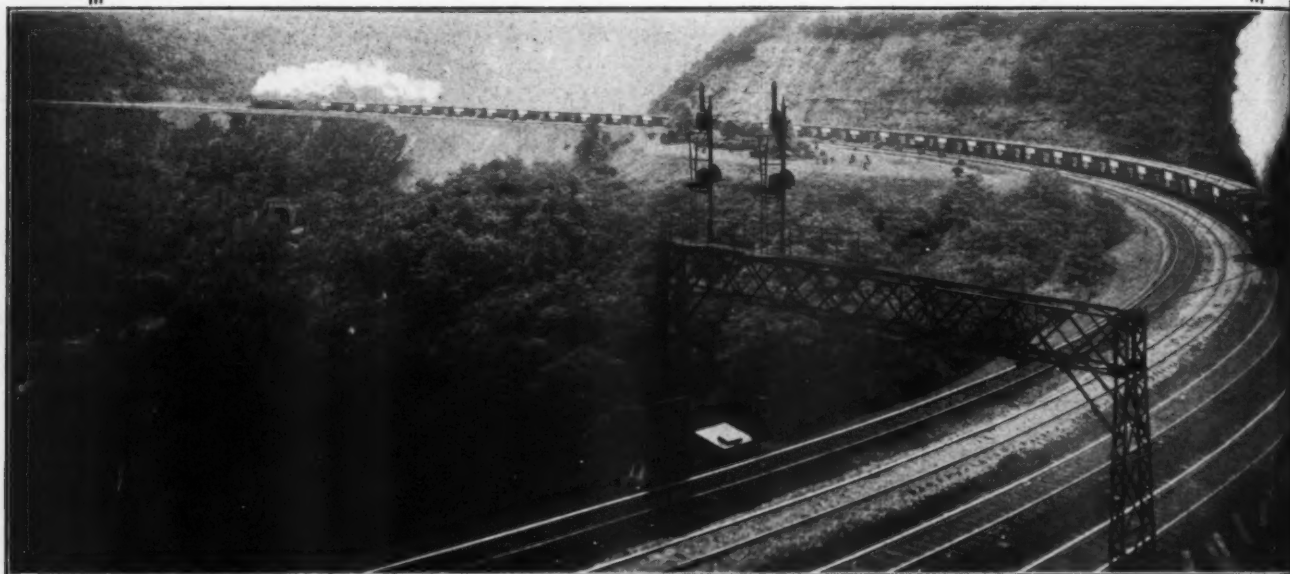


Everybody Likes CANDY



QUALITY

**Made it possible for us to ship a
Solid train of 31 cars of Chocolate
Aggregating 1,250,000 pounds**



This picture was taken enroute at the famous Horse Shoe Curve on the Pennsylvania

QUALITY and SERVICE

tell the story of this accomplishment

**We take this opportunity to thank our friends, who helped us make this
train shipment possible.**


THE STOLLWERCK CHOCOLATE COMPANY

Factory: STAMFORD, CONNECTICUT

NEW YORK

CHICAGO

LOS ANGELES



EDITORIAL

All Aboard for Prosperity

The present rail and coal strike situation has merely applied the brakes temporarily to the substantial and irresistible progress of business on the prosperity highway. Fundamentally there is a good reason for this optimism. This is a year of bumper crops; a building boom and construction program that seems to know no bounds, steel mills working at fullest capacity, car loadings at a high peak and retail sales on the increase in every major industry (jewelry industry being the only exception).

In our own industry the decks are pretty well cleared for action and it is high time to be on the jump and to get your house in order, true up your organization, take the slack and lost motion out of your sales and production departments and lay siege for a fall sales volume that will help redeem the grand totals for the industry this year.

The trainload of a million and a quarter pounds of chocolate coating that was shipped to the central west and coast states from Stamford, Conn., last month was an exemplification of the proper spirit of both buyer and seller. The seller deserves great credit surely for the accomplishment of selling thirty solid cars of coatings to be delivered in one trainload at a time of the year when the manufacturing activity of our industry is supposed to be at its lowest ebb. It is also a credit to the buyers—the candy manufacturers who backed up their faith in their business by signing on the dotted line and placing their orders *early* for fall requirements, thus helping to keep the wheels of production and transportation moving and to stabilize the cycle of business activity which is the backbone of the prosperity campaign.

This is a sample of the mobilization in all lines of industry this summer, which when released, with the settlement of transportation and fuel strikes—and a taste of the first frost—will undoubtedly be manifested this fall in form of the most intensive sales offensive and revival of business which has been experienced in many years.

Space will only permit a brief mention of the National Prosperity Bureau, which is an organization of representatives of each of the most important national groups of retailers, wholesalers, manufacturers, advertising and sales executives of the country for the purpose of putting into practice a practical plan of energizing business and placing it on a sounder basis.

A co-operative committee will focus the efforts of each of these separate groups into

one selling force with one objective, that of increasing business during September, October and November of this year.

This is a colossal undertaking, but is characteristically American in its conception and will be none the less so in its accomplishment.

“All Aboard for Prosperity”

Don't Say “Glucose” Nor “Glu” When You Mean Corn Syrup

Glucose is *not* corn syrup, nor is corn syrup glucose; however, corn syrup *contains* glucose. (See first chapter of first article on Corn Syrup by Dr. Bryant, issue of January, 1922. Also the article on page 32 of this issue, “What Is Corn Syrup and What Is Glucose,” by Dr. Cutler.)

Every practical man in our industry should understand clearly the various fundamental sugars, such as sucrose, dextrose, glucose, levulose, lactose, fructose, and be able to use these terms intelligently.

Unfortunately many buyers, superintendents and candy makers themselves use the word “glucose” when they mean *corn syrup* and consequently the supply field has picked it up, using it incorrectly in their sales literature. Even some of the latest editions of technical books of candy formulas and recipes use the term “glucose” throughout without any explanation as to its relation to corn syrup. This is dead wrong when the confectioner's corn syrup of today contains only about 28 per cent of glucose.

To you manufacturers who insist on ordering glucose, look up your invoices and you will find that it is billed as *corn syrup* because that is what you wanted and what you got although not what you ordered. This subject cannot be sidetracked as a dead issue until these terms are used correctly at least by those in our own industry.

It is the opinion of this magazine that the word “glucose,” when used to designate corn syrup and more especially its nickname “glu,” should be eliminated from the confectioner's vocabulary not only because it is suggestive of something impure or of questionable food value, but it is absolutely incorrect and misleading to use the words glucose and corn syrup indiscriminately as if they were synonymous.

What could be more constructive than for every confectionery manufacturer, distributor, salesman and dealer to not only understand the properties of the various raw materials used in the manufacture of candy, but also their nutritional value.

IV—Chemical and Bacteriological Analysis



The fourth of a series of seven articles on Edible Gelatin

by **Robert H. Bogue, Ph. D.**

*Industrial Fellow of the Mellon Institute of Industrial Research, Pittsburgh, Pa., and
Research Chemist for Armour & Company, of Chicago, Ill.*

Exclusively for **The Candy Manufacturer**

THE chemical and bacteriological analyses of gelatin are carried out by the bureaus of chemistry of the federal and state governments for the purpose of determining the quality of the material at hand and ascertaining if it is satisfactory for passing as an edible product. And those consumers who are vitally interested in obtaining and using in their output, whether it be ice cream, confections, fancy biscuit, or a table dessert, only such gelatin as is of unquestionable quality have, to an increasing extent, found it to be good business also to test for certain chemical groups or elements, and to make a bacteriological examination, in addition to the physical tests described in the last chapter. This procedure is urged by the best of the American manufacturers, as it can only enhance the value of their product in the eyes of the consumer, and is a step towards the elimination of the small number of houses that attempt to continue the sale of inferior material.

This chapter is inserted for the benefit of the large number of consumers who have not yet found it expedient to make chemical and bacteriological analyses. The treatment must of necessity be technical, and is written for the aid of the chemist who might find difficulty in obtaining reliable information elsewhere.¹

A reasonably complete chemical examination

of gelatin will include determinations of water, ash, sulphur dioxide, arsenic, copper and zinc. A determination of nitrogen is sometimes made and the nitrogen content multiplied by some

factor upon the assumption that this product will represent the gelatin content. This, however, is not, true except for a material in which the nitrogen is completely in the form of unhydrolyzed gelatin. It has already been pointed out, however, that the nitrogen is distributed among the groups; protein, proteose, peptone, and amino acids, and any such estimation of gelatin, therefore, becomes meaningless. Furthermore, the total nitrogen content varies exceedingly little upon passing from the highest to the lowest grade, so it cannot serve as an index either of edibility or of hydrolysis. A determination

of the protein by precipitation with half saturated magnesium sulfate might be made, and would be a valuable index of the hydrolysis, but, as shown previously, other physical tests parallel the gelatin content, and as they are so much more easily made it becomes unnecessary to perform this additional very exacting determination.

1. A much more complete treatment of this whole subject will be found in the writer's treatise, "The Chemistry and Technology of Gelatin and Glue," McGraw-Hill Company, New York, 1922.

Dr. Bogue's Complete Serial on Edible Gelatin

MAY:
Raw Materials and Manufacture
JUNE:
Constitution and Properties
JULY:
Testing and Grading
AUGUST:
Chemical and Bacteriological Action
SEPTEMBER:
Buying and Handling
OCTOBER:
Dietary Value and Physiological Action
NOVEMBER:
Importance in Food Products

This series will be supplemented by articles from candy superintendents on the practical handling of gelatin in candy making.

Shall we enter an extra subscription sent to your home address where these instructive articles can be studied at your leisure?—Editor.

Water

The determination of water was described in the previous chapter and will not be repeated here. This determination is of value to enable the tester to compute his examinations on the dry basis. It would seem reasonable, also, that sales might more properly be executed upon the dry basis.

Ash

A three-gram sample of the finely ground material, or a portion of the sample used in the water determination, is placed in a porcelain crucible (platinum may be used if phosphates are absent) and heated gently until the water is expelled and the gases have been completely evolved. The crucible is then placed in a muffle furnace and heated at a moderate temperature until the ash is free of carbon. The residue of ash should not constitute more than two or three per cent of the dry weight of the gelatin. The lower grades will be slightly higher at times, but an ash content of over four per cent usually signifies the addition of some mineral salt. This may have been added to assist in the clarification. Alum has at times been used for that purpose. If the lime has been incompletely removed in manufacture it will be manifest in the ash content. When the ash is high it is usually desirable to examine it at least qualitatively for its principal constituents.

Arsenic

Arsenic may gain access to gelatin through the use of impure acids in the treatment of the bone, or from the sulphur dioxide used in the process. Commercial gelatins and glues often contain from 5 to 30 parts per million of arsenic, but edible gelatin is limited to 1.4 parts per million.

Ten grams of gelatin are hydrolyzed with dilute sulphuric acid for 2 hours, cooled, and made up to 50 c.c. in a volumetric flask. Twenty c.c. of the solution are introduced into a 2-ounce bottle which has been prepared as follows: A glass tube 1 cm. in diameter and 6 cm. long and containing a piece of lead acetate paper rolled into a cylinder is fitted to the bottle by means of a perforated rubber stopper. A similar glass tube filled with absorbent cotton that has been soaked in 5 per cent lead acetate solution and squeezed to remove excess of solution is inserted into a stopper and affixed to the first tube. This tube is connected by another stopper with a narrow glass tube 3 mm. in diameter and 12 mm. long containing a strip of mercuric bromide paper. This paper is prepared by cutting heavy drafting paper into strips 2.5 mm. wide and 12 cm. long, and soaking for an hour in a 5 per cent solution of mercuric bromide in 95 per cent alcohol, and dried.

Twenty cc. of dilute (1 to 2) arsenic-free sulphuric acid are added to the solution in the bottle and then 4 cc. of a 20 per cent solution of potassium iodide. The bottle is warmed in

water to 90° C., 3 drops of stannous chloride solution (40 grams of stannous chloride crystals made up to 100 cc. with concentrated hydrochloric acid) added, and heated for 10 minutes. The bottle is cooled by placing in ice water, and 15 grams of arsenic-free zinc added, and the tubes placed in the bottle. The evolution of gas is allowed to continue for an hour. The sensitized paper is then removed and compared with stains produced similarly, with known amounts of arsenic, using solutions containing 0.001, 0.002, 0.005, 0.010, 0.015, 0.020, 0.025, and 0.030 mg. of arsenious oxide (As_2O_3).

The standard arsenic solution is made by dissolving 1 gram of arsenious oxide in 25 cc. of 20 per cent sodium hydroxide, neutralizing with dilute sulphuric acid, adding 10 cc. of concentrated arsenic-free sulphuric acid, and diluting to 1 liter with water. One cc. of this solution contains 1 mg. of arsenious oxide. Twenty cc. are dilute to 1 liter. Fifty cc. of the latter solution when diluted to 1 liter give a standard solution containing 0.001 mg. of arsenious oxide per cc. which is used to prepare the standard stains. The dilute solutions must be prepared immediately before use, and tests must be made on blank runs.

Copper

Copper may find access to gelatin through the use of copper containers, or through impure acids or other chemicals used in manufacture. Thirty parts per million is the maximum permissible in edible gelatin.

Twenty grams of gelatin are digested with dilute hydrochloric acid for 5 hours, brought to a volume of about 200 cc. and boiled. After cooling, it is made slightly alkaline with ammonium hydroxide and boiled to expel excess of ammonia. Ten cc. of concentrated hydrochloric acid are added, heated to boiling, and saturated with hydrogen sulphide. The precipitate is filtered off and washed with hydrogen sulphide water. The filtrate is reserved for the determination of zinc. The filter with the copper sulphide is placed in a small flask, 4.5 cc. of concentrated sulfuric acid and 4.5 cc. of concentrated nitric acid added, and heated till sulfur trioxide is evolved. On cooling, 30 cc. of water and an excess of bromine water are added. It is then boiled till the bromine is expelled, and a slight excess of ammonium hydroxide added. The excess is expelled by boiling and a slight excess of strong acetic acid added and boiled for a minute. On cooling, 10 cc. of 30 per cent potassium iodide are added.

The copper will oxidize this to iodine, and the latter is titrated at once with N/100 sodium thiosulphate until the brown tinge becomes weak, then sufficient starch indicator added to give a blue coloration, and the titration completed. The thiosulphate solution must have been standardized against pure metallic copper treated as above. The volume of thiosulphate

(Continued on page 36)

Some Theories of Refrigeration and the Machinery Employed

(Continued from July Issue)

The third of a series of articles on Refrigeration and Air Conditioning and its Application to the Candy Industry

by **A. W. Lissauer**
Refrigerating Engineer

The Purge Valves

ONE important addition to the system which must not be overlooked, consists of an equipment of purge valves. During use, and after the refrigeration system is shut down at night, the system is pumped back by reversing the connections and a vacuum is maintained in the coils and receiver. This reversal of pressure very often pulls in, through leaky gaskets, etc., a great deal of air and when the system is started up again, this air being non-condensable, interferes with the operation of the system.

It is surprising how much damage a very small quantity of air will do. These purge valves are placed at the top of the condensers and at regular intervals, it is necessary to open them up while the system is in operation to let out the air. Of course, this action wastes some ammonia, so that also a certain amount of liquid ammonia must be supplied to the system to keep it filled. The receiver is supplied with a gauge glass which indicates the level of the liquid and this must never be allowed to go so low that it uncovers the discharge pipe leading to the King valve. In that case, gas will be forced up to the cooling coils and no refrigeration work will be done.

Refrigerating Agents Other Than Ammonia

I have based my description of a refrigeration system on the use of ammonia. There are other agents of a similar nature, such as sulphur dioxide, ether and carbon dioxide. Due to the danger attendant upon the use of ether, which is very volatile and hard to hold, and to the fact that sulphur dioxide in the presence of water is very corrosive to metals, these gases have not come into general use except for the very small household equipments. The carbon dioxide systems have been in favor for a number of years, but have not made the progress in this industry that the ammonia systems have, because of the fact that the carbon dioxide will not liquify at the temperature supplied by the ordinary cooling water, unless the gas is subjected to a pressure of approximately 1,200-1,400 lbs. per sq. in. Of course,

the high pressure necessitates small pipes, but the entire system must be so reinforced, due to this high pressure, that a number of people have preferred the ammonia system with its attendant irritating gas, due to the fact that the pressures under which it operates are nominal.

There is also another system known as the absorption system, which replaces the ammonia compressor with tanks containing aqua ammonia which absorb the gas given off from the cooling coils. This richer liquid is then heated, and the ammonia gas driven off under pressures approximating the compression system, the gas being rectified to remove water vapor, then condensed in the ordinary type of condenser and used again in the cooling coils as liquid.

This system has not come into any great use although it has its application, especially in a plant where a great quantity of exhaust steam from the power plant is available. Under these conditions, a system of this kind is especially useful, as in the summer-time non-condensing plants have exhaust steam to spare, this steam being used in the winter-time for heating. By the installation of such an absorption system, the power plant can be run economically all the year round, as the refrigeration is shut down when the heating system is used, thus making an all-year-round use for the exhaust. A compression system takes up a great deal less room than the absorption system and it is in the majority of cases found more convenient to use electric power for the compressor than to have the large tanks taking up valuable space. The absorption system finds its greatest field of usefulness under conditions where extremely low ammonia back pressures and consequently low temperatures are desired.

One point must be kept in mind in considering all refrigeration and that is that no matter what source the liquid ammonia is obtained from, it is all used in the same way, and it is necessarily in the application of its effect that the candy manufacturer is most interested.

It has been said that the temperature of the ammonia is dependent upon the pressure and consequently if the operator predetermines the

suction or back pressure on the cooling coils, he will regulate the temperature of the refrigerating medium. Also it is true that the volume of a gas and its weight per cubic foot vary inversely and directly as the pressure. Now, then, the capacity of an ammonia compressor depends upon its volume and the number of times the piston compresses a charge of gas in a unit of time. Now, obviously, the way to increase the capacity of a compressor is to increase the number of compressions per unit of time, but there is a limit to this speed.

On the other hand, if a gas can be fed to the compressor, say at 45 lbs. back pressure, it will be denser than gas at 15 lbs., that is, contain more ammonia per cubic foot. Consequently, one reciprocation of the compressor will deliver a great deal more actual ammonia than it would if the pressure were lower. When ammonia gas is at 45 lbs., it is just twice as dense as when it is at 15 lbs. pressure. Consequently, a given compressor will deliver twice as much ammonia under the higher suction pressure than under the lower. It takes practically no more power to compress this denser gas, so that it can be seen that an increase in the suction pressure to 45 lbs. will double the capacity of a compressor which is rated at 15 lbs., and with only a slight increase in expenditure for horsepower.

Of course, the inevitable consequence is, that the cooling coils will have a higher temperature refrigerating medium due to this higher pressure gas, but under certain well defined circumstances, this is an advantage rather than a detriment, because a medium at 45 lbs. has a temperature of 30° F. and consequently, the danger of freezing up is avoided. In the modern system of refrigeration, this is a point which can be discounted because, by flooding the cooling coils with water, so much greater efficiency can be obtained in the heat transmission rate that the fact that the refrigerating medium is at a higher temperature does not weigh very heavily, with the attendant advantage of practical elimination of freezing. It may be seen that in this new refrigeration development, an ammonia compression system which is designed for say 100 tons capacity at 15 lbs. back pressure can be made without any important additional expenditure of power to handle enough ammonia gas actually to give 200 tons of refrigeration effect in the cooling coils.

In closing, it might be well to say that what is known as refrigeration effect is the "ice melting capacity," not the "ice making capacity." In other words, a ton of refrigeration as it is ordinarily used in this work, means the amount of heat which is given off by the melting of one ton of ice. This, in its final form, is equivalent to the absorption of 200 heat units per minute per ton. The ice-making capacity of a ton of refrigeration is approximately one-half of this.

Candy Day—October 14th

(Continued from page 17)

Some manufacturers are lukewarm on the question because they don't believe that the retailer is interested, and therefore, it is up to the retailer and the jobber also to let the manufacturers know that they *are* interested by requesting the advertising matter, which the manufacturers can buy from the Publicity Department of the National Confectioners' Association.

Dont' wait till your customers, the jobbers and dealers, make a request for CANDY DAY advertising matter, but take the initiative now to tell them that they may depend on receiving a complete campaign—window trims, news items, etc.—and to begin now to plan on making CANDY DAY the big success which we all have reason to expect.

There is no doubt about the advantages of CANDY DAY. It has been proven an idea that will greatly increase your business.

Impress the dealer with the fact that the advertising matter costs him nothing and he can sell on CANDY DAY any goods he has in stock.

Some of the ideas embodied in our advertising matter are these:

Announcement and teaser window strips to be displayed the week of CANDY DAY.

Window trims and displays for CANDY DAY.

The suggestions contained in this copy are as follows:

"Remember the Sweetest Girl on Candy Day." This suggests purchases for sweethearts, wives, sisters and mothers.

"Ask Dad for a Dime for Candy Day." This encourages children to ask their parents for money for CANDY DAY, and they do and spend it on CANDY DAY.

"Make Somebody Happy on Candy Day." Many other features are covered, all suggestive of purchasing candy.

It's a big idea, cash in on it.

One of the big things of the nation-wide advertising campaign of the National Confectioners' Association is to create more candy-buying days.

The Slogan of the Industry

"Remember, Everybody Likes Candy"

Are you supplying your dealers with the attractive metal counter signs displaying this slogan. If not, order them at once from the Publicity Committee of the National Confectioners' Association. Do it now, please, for it takes time to get everything ordered and distributed on time.

Help your industry put this slogan over.

This is an opportunity for manufacturers and jobbers in our industry to organize to "help the retailers." See that they get this help.

Food Flavors

Source, Composition and Adulteration



J. W. SALE

The second of a series of three articles

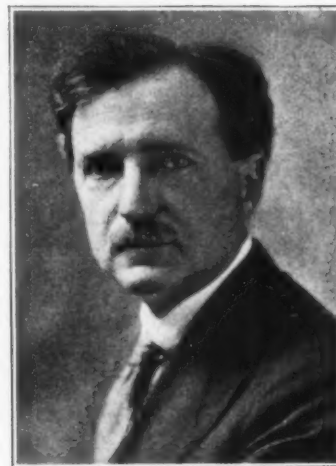
by **J. W. SALE**

Chemist in Charge Water and Beverage Laboratory, U. S. Bureau of Chemistry

and

W. W. SKINNER

*Assistant Chief, Bureau of Chemistry
U. S. Dep't of Agriculture*



W. W. SKINNER

IN Part I of this discussion and compilation of food flavors we referred to Department Circular 136, containing definitions and standards for flavors with which all shippers and users of flavors should be familiar, described various types and mode of preparation of flavors and flavoring products, and began the compilation of data with regard to specific flavors, which included sixteen flavors, the last one being oil of cajeput.

In this article we shall extend the compilation to cover additional flavors, keeping in mind their nature, source, mode of preparation, composition, use, and adulteration, and shall include statements of composition of the various products as set forth in the standards of the United States Department of Agriculture. Most flavors are highly complex compounds and, as a general rule, tests for their purity require laboratory equipment and an experienced chemist to conduct them and interpret the data obtained. In a later chapter we shall indicate general methods of examination for the purity of the more widely used flavors.

The reader who has accompanied us thus far on our journey into the field of food flavors has, we believe, begun to appreciate that it is a very wide one. In European countries and in the Orient many flavors are used, while in the United States there is a tendency to consume relatively large quantities of a limited number of popular flavors, such as ginger, vanilla, lemon, and orange, and to use imitation fruit flavors.

A particular flavor used alone may be deemed undesirable or even offensive by many people and yet be an important ingredient of a pleas-

ing combination of flavors. The possibilities of blending flavors of natural origin to form new compounds, therefore, are very great, and the successful blending of flavors is constantly being accomplished, as evidenced by the popularity of new brands of bottled sodas and of other flavored food. A continuation of the discussion on individual flavors, which includes the standards of the United States Department of Agriculture in those instances where standards have been promulgated, follows:

Cardamom

Cardamom: Cardamom is a plant with a thick, woody root stalk which is cultivated in Ceylon and Malabar. Commercial cardamoms are the seeds covered by a capsule. Cardamom seed consists of the fruit with the pericarp removed. Cardamom oil is distilled from the seeds and is sometimes adulterated with the cheaper coriander oil, the yield of oil being from three to six per cent (Ceylon seeds). The oil contains a considerable amount of the ester, terpinyl acetate, which requires two hours for complete saponification. The seeds and the oil are used for flavoring purposes in cordials, confectionery, cakes, sausage, etc.

Cassia

Cassia: The cassia tree is cultivated chiefly in China proper, which exports the largest amounts of cassia bark and cassia oil. The flower buds (cassia buds) and bark of the cassia tree, as well as the essential oil, have a cinnamon-like odor which is less delicate and more powerful than the odor of oil of cinnamon. Ground cassia (ground cinnamon) should contain not more than 5 per cent of total ash, nor more than 2 per cent of ash in-

soluble in hydrochloric acid. Being cheaper, cassia oil is sometimes used to adulterate cinnamon oil. Cassia oil itself is almost universally adulterated with rosin and must be redistilled. It is usually contaminated with lead derived from the containers in which it is shipped from China. Oil of cassia is distilled from the leaves and young twigs of the cassia tree in China. The bark also yields oil. Commercial cassia oil should be lead free and should contain not less than 75 per cent, by weight, of cinnamic aldehyde, which is also the principal odorous constituent of cinnamon oil. Artificial cinnamic aldehyde is a commercial article and is more expensive than cassia oil, but cheaper than cinnamon oil. Cassia extract should contain not less than 2 per cent by volume of oil of cassia.

Cherry

Cherry: The bark of the wild cherry tree, a domestic forest tree, is used in the form of an extract in soda water flavors. On distillation the bark yields about two-tenths per cent of an essential oil very closely resembling oil of bitter almonds, its flavor being due to benzaldehyde. It has been stated previously that oil of bitter almonds contains a small quantity of poisonous hydrocyanic acid.

Cinnamon

Cinnamon: Ceylon cinnamon is the dried bark of a tree, a native of Ceylon, but which is cultivated also to some extent in various other tropical countries. Ground cinnamon (ground cassia) should contain not more than 5 per cent of total ash, nor more than 2 per cent of ash insoluble in hydrochloric acid. The question of the use of cassia buds in ground cinnamon is under consideration. Cinnamon oil is used for flavoring beverages of the root beer type, cordials, and fine confectionery. It is obtained to the extent of five-tenths to one per cent by distilling the bark, and should be lead free and should contain not less than 65 per cent by weight of cinnamic aldehyde and not more than 10 per cent by weight of eugenol. Adulteration of the bark oil consists in adding the leaves to the bark when distilled or adding cinnamon leaf oil to the bark oil after distillation. The cheaper oil of cassia is also an adulterant of cinnamon oil. Cinnamon extract should contain not less than 2 per cent by volume of oil of cinnamon.

Citron

Citron (French cedrat, not citron): The citron tree grows in southern Europe, especially in Italy. The fruit resembles the lemon, but is larger and has a thicker rind. The rind is candied and also yields on expression an essential oil similar to lemon oil, with which it is sometimes adulterated.

Cloves

Cloves: Cloves are the dried flower buds of an evergreen tree. Zanzibar, Pemba, Penang,

and Amboyna are commercial grades, Penang cloves being the best. Cloves should contain not more than 5 per cent of clove stems, not less than 15 per cent of volatile ether extract, not less than 12 per cent of quercitannic acid (calculated from the total oxygen absorbed by the aqueous extract), not more than 10 per cent of crude fiber, not more than 7 per cent of total ash, nor more than five-tenths per cent of ash insoluble in hydrochloric acid. Clove buds yield from 14 to 21 per cent of essential oil which contains 78 to 98 per cent of eugenol (eugenol obtained from clove oil is a raw product for the manufacture of synthetic vanillin). Clove stems also yield a similar essential oil, but in smaller quantity. Oil of cloves should be lead free. Clove extract should contain not less than 2 per cent by volume of oil of cloves.

Coca

Coca: The coca tree is a South American plant growing to a height of from six to eight feet. It is cultivated also in the West Indies, India, Ceylon, Java, and elsewhere. Large quantities of the leaves are chewed by the natives. One of the chief active principals of the leaves is cocaine, which must be removed before the leaf extract is used in beverage flavors in the United States.

Cocoa

Cocoa (chocolate): The cacao plant is widely cultivated in Mexico, Central and South America, the West Indies, and in other tropical countries. Chocolate and cocoa products are made from the beans which grow in pods on the tree. After separation from the pods the beans are fermented or sweated to remove pulp, and are then dried, cleaned, roasted, and crushed. Two products are thus obtained, cocoa nibs, which are broken kernels, and cocoa shells. The germ is removed when the beans are crushed. The shells are used to make cheap beverages having a flavor resembling chocolate. The cocoa nibs are ground and used to manufacture sweet and bitter chocolate, cocoa, cocoa butter, and other cocoa products. Cocoa is chocolate which has been deprived of a portion of the fat or oil and finely pulverized. An important constituent of chocolate is theobromine. Chocolate, plain chocolate, bitter chocolate, chocolate liquor, chocolate paste, bitter chocolate coatings, should contain not more than 3 per cent of ash insoluble in water, 3½ per cent of crude fiber, 9 per cent of cacao starch, and not less than 45 per cent of cacao fat.

Coriander

Coriander: Coriander seed is the dried fruit of an annual herb which is cultivated in Europe, especially France and Russia, Galicia, Roumania, and elsewhere. The ground fruit is used in sausage and curry powder and the whole fruit in pickling spice. Coriander seed should contain not more than 7 per cent of total ash, nor more than 1½ per cent of ash insoluble

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in hydrochloric acid. The yield of essential oil is about one-half per cent or less. The yield varies considerably, depending upon the source of the seed and other factors. The characteristic constituent of the oil is linalol, one of the higher alcohols which occurs in a number of essential oils, including oil of linaloe, ylang ylang (perfume), petit-grain, lemon, and spearmint. Pinene is present also. The oil, which has a pleasant, aromatic odor, has been found adulterated with orange oil, cedar wood oil, and turpentine. It is used in compounding flavors.

Coumarin

Coumarin (see tonka).

Curacao

Curacao: Curacao peel is the dried peel of the curacao orange, a peculiar variety of orange growing in Curacao, an island in the Dutch West Indies. It is used in the manufacture of Curacao liquor and for this purpose is softened by maceration with water and subjected to distillation.

Fenugreek

Fenugreek: Fenugreek seeds are the dried fruit of an annual leguminous herb which is cultivated in the Mediterranean region, parts of central Europe, Morocco, Egypt, and India. The seeds have an aromatic flavor and are used in curry powders and in the manufacture of imitation maple flavors. The comminuted seeds are reported to yield about 0.014 per cent of a brown oil with an intense odor.

Jasmine

Jasmine: The common white jasmine is cultivated in the south of France for the fragrant oil which is obtained from the flowers by an absorption process. The oil is reported to contain about 65 per cent of the ester benzyl acetate and smaller quantities of linalol, linalyl acetate, benzyl alcohol and certain other constituents. While jasmine and imitation oils of jasmine are used almost wholly as perfumes, they are used also to some extent in blending imitation fruit flavors.

Kola

Kola (Cola): Kola nuts are the fruit of a large tropical tree growing on the west coast of Africa, in East India, Ceylon, Jamaica, and Brazil. The cured nuts contain caffeine to the extent of about 0.72 to 2.02 per cent. They are reported also to contain about 0.02 per cent theobromine, an important constituent of cocoa. Extract of ground kola nuts is employed as an ingredient in certain beverage flavors.

Lemon

Lemon: The lemon tree is a straggling bush or small tree about twelve feet high, apparently introduced by the Arabs into Spain be-

tween the twelfth and thirteenth centuries. It is very fruitful, producing in favorable seasons and localities as many as 3,000 fruits. It is extensively cultivated in southern Italy and Sicily, Florida, and California, but is grown also in France, Spain, Portugal, Australia, New South Wales, Jamaica, and elsewhere. The fruit is gathered while still green, the finest specimens being packed and the remaining fruit or culls reserved for the manufacture of lemon products; namely, citric acid, citrate of lime, lemon oil, and candied lemon peel.

The flavor of the fruit is due to the essential oil, the well-known lemon oil, which is contained in distinct cells in the exterior rind and may therefore be obtained by simple expression of the peel. There are several processes actually used to separate the oil. In the so-called two-piece and three-piece sponge methods the peel is usually dipped in water, drained and then flattened and pressed against a sponge to which the exterior of the rind is applied. This operation bursts the oil cells and the sponge absorbs the oil. The daily output of oil per operator using these methods is about two pounds.

The oil is obtained also by perforating the oil cells with the points of copper tacks in a saucer-shaped vessel in which the whole fruit is rotated. These hand processes are inapplicable to the United States because of the high price of labor, and consequently hydraulic presses or a method involving distillation are employed.

Lemon oil is defined as the volatile oil obtained by expression or alcoholic solution from the fresh peel of the lemon (*Citrus Limonum* L.); it has an optical rotation (25° C.) of not less than +60° in a 100-millimeter tube, and contains not less than 4 per cent by weight of citral. It is a complex mixture containing over 90 per cent of hydrocarbons, chiefly the terpene d-limonene. The aroma of the oil is due almost entirely to the presence of oxygenated constituents, of which aldehydes constitute from 4 to 7 per cent of the oil. These aldehydes consist of citral, citronnellal, nonyl and decyl aldehydes and other members of the aliphatic group. Other important constituents from the standpoint of aroma are the esters, linalyl and geranyl acetates.

Terpeneless oil of lemon is oil of lemon from which all or nearly all of the terpenes have been removed. It is produced by distilling off most of the terpenes of either the pressed or distilled oils, generally in vacuum. Lemon flavored products, pies, cakes, bottled sodas, confectionery, etc., are highly esteemed and enormous quantities of the oil are used in their manufacture. It is believed that nearly 70,000 pounds of lemon oil are produced annually in the United States alone. Lemon oil, terpeneless and sesquiterpeneless lemon oil, lemon ex-

(Continued on page 38)

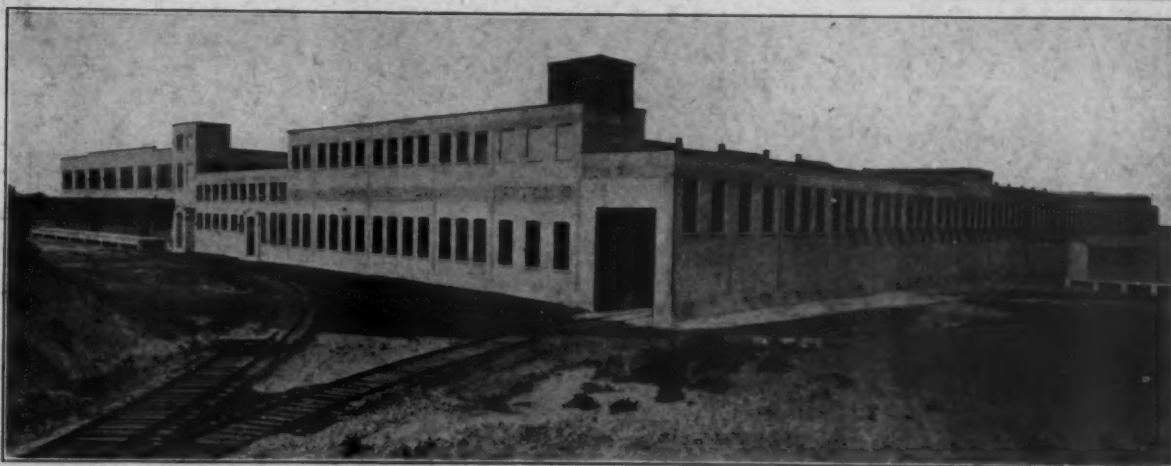
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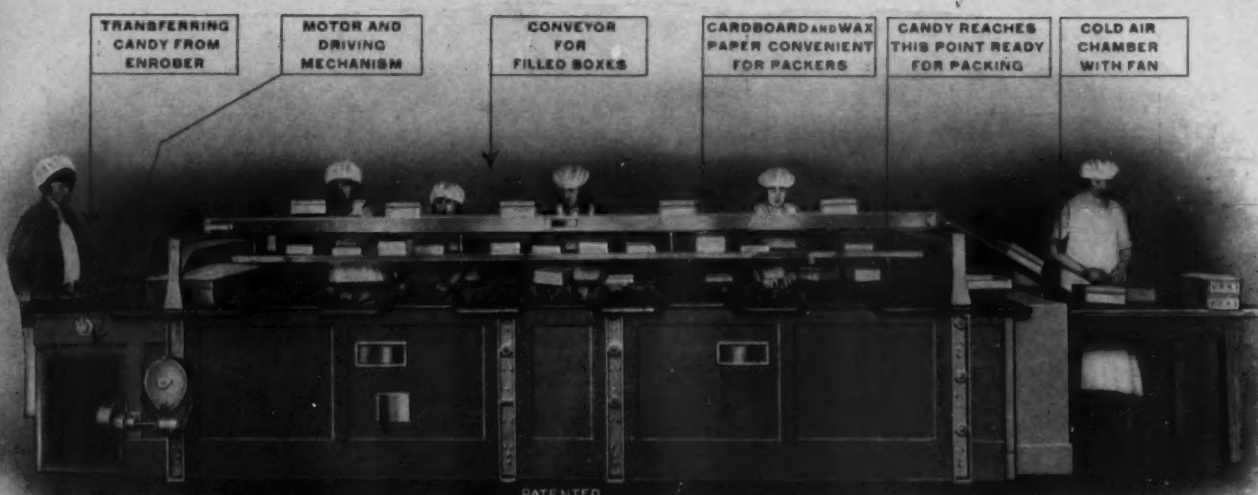
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MILWAUKEE, WIS.

U.S. Gelatine is produced in the World's Largest Gelatine Factory, which means Uniformity, Purity, Strength at the Right Price. Stock used in the manufacture assures a bright, clean, odorless Gelatine.

□ □ □ LET US SEND YOU SAMPLES AND QUOTE ON YOUR REQUIREMENTS □ □ □

Using a Greer Means a Bigger Fa



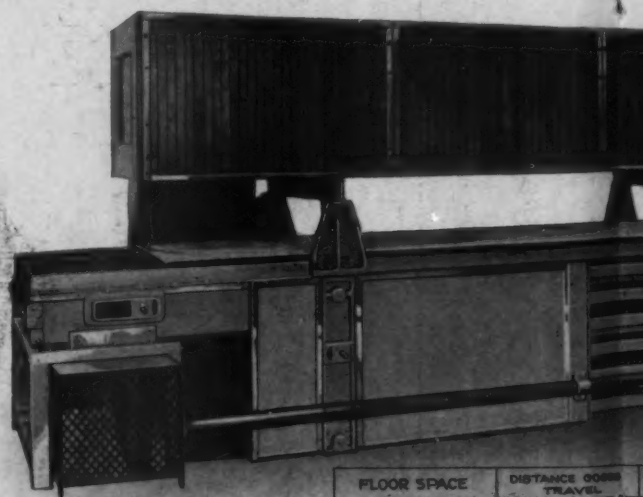
PATENTED

STYLE	FLOOR SPACE	Height Over All	Distance Candy Travels	Approximate No. of Plaques per Hr	POWER	WEIGHT
DM 60 Trays	3' 6" x 16'-10"	4' 3"	85 ft	200	½ H. P.	2600
DM 53 Trays	3' 6" x 15'-2"	4' 3"	75 ½ ft.	176	½ H. P.	2500
DM 46 Trays	3' 6" x 13'-6"	4' 3"	66 ft.	153	½ H. P.	2400

Showing The Greer Chocolate Drying-Convey

Speed up your production by utilizing a Greer. It places before your packers 200 plaques of perfectly dry goods each hour—a steady stream of finished goods direct from your enrobers, and it sends all the empty plaques back there. It gives a perfect gloss to your enrober goods—brings them at last right up to hand dipped, treating each individual piece identically as it handles all the others. The uniformity of your goods is absolute. You catch the eye of the public with goods of the Greer.

We have built over this machine a Bunker Room which is scientifically insulated. It is piped for either brine or ammonia refrigeration as specified at time of ordering. To operate this machine up to a maximum capacity a five-ton refrigeration machine is required for its cooling. The coils and a specially designed blower for air circulation are supplied and so placed that a uniform temperature may be maintained throughout the machine, which insures the proper setting of chocolate bar work quickly.



FLOOR SPACE	DISTANCE GOODS TRAVEL
5 ½ ft. X 25 ft.	110 ft.

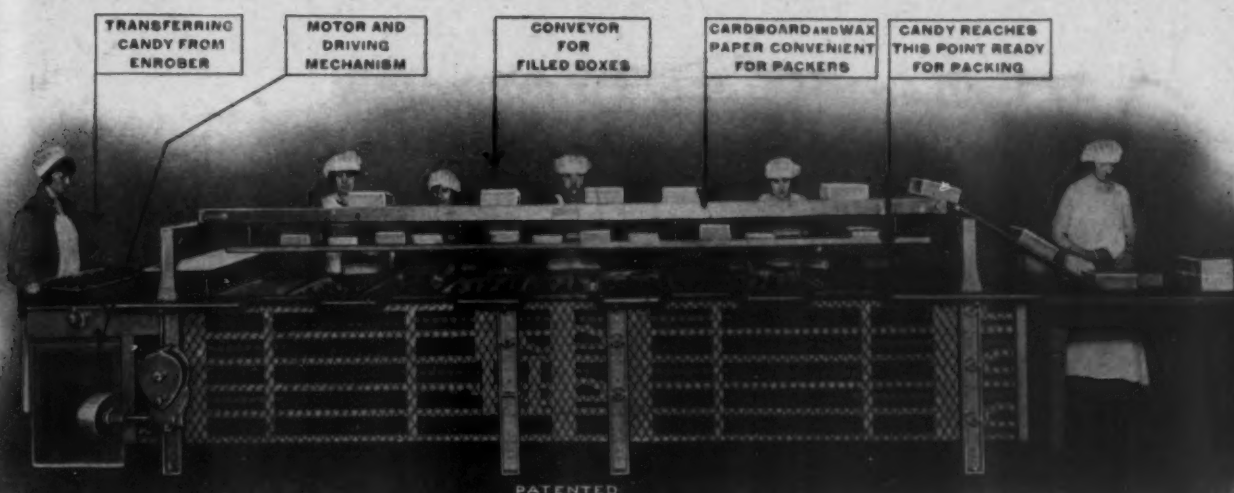
119-137 Windsor Street

The Greer Bar and Ten
Guaranteed to produce from

J. W. GREER

Manufacturers of confectionery m

Factory Within Your Existing Walls



PATENTED

TYPE	FLOOR SPACE	Height Over All	Distance Candy Travels	Approximate No. of Plaques per Hr	POWER	WEIGHT
DM 60 Trays	3' 6" x 16'-10"	4' 3"	85 ft	200	½ H. P.	2600
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DM 46 Trays	3' 6" x 13'-6"	4' 3"	66 ft.	153	½ H. P.	2400

Conveying-Packing Machine—Enclosed and Open

It cuts your production costs, and will take charge of any goods your enrober can produce, and saves 99 per cent of waste. You can pack direct into boxes and the setting of the goods is insured by the regulated speed of the conveyor. There can be no discoloring. A shelf under the conveyor takes charge of your wax paper, cardboard, boxes, etc., and the filled boxes can be discharged by the upper conveyor where you want them. Equally good for candy, biscuits or cakes.



The bars cool and in cooling contract from the metal moulds, freeing themselves, thereby eliminating any damages to moulds by hammering or unnecessary breaking of chocolate. The machine is equipped with a conveyor passing through a warm tunnel, returning the empty moulds from the delivery end back to the Depositor for refilling. In 25 ft. by 5½ ft. you get a travel of 110 ft, and 360 square ft. of cooling space. Built either with or without Bunker Room.

DISTANCE GOODS TRAVEL	TIME	MACHINE	FAN	CONVEYOR	NET WEIGHT
110 ft.	20 to 40 min.	1 HP	1 HP	½ HP	12000 lbs.

and Ten-Pound Cake Machine

produce from six to eight tons per day

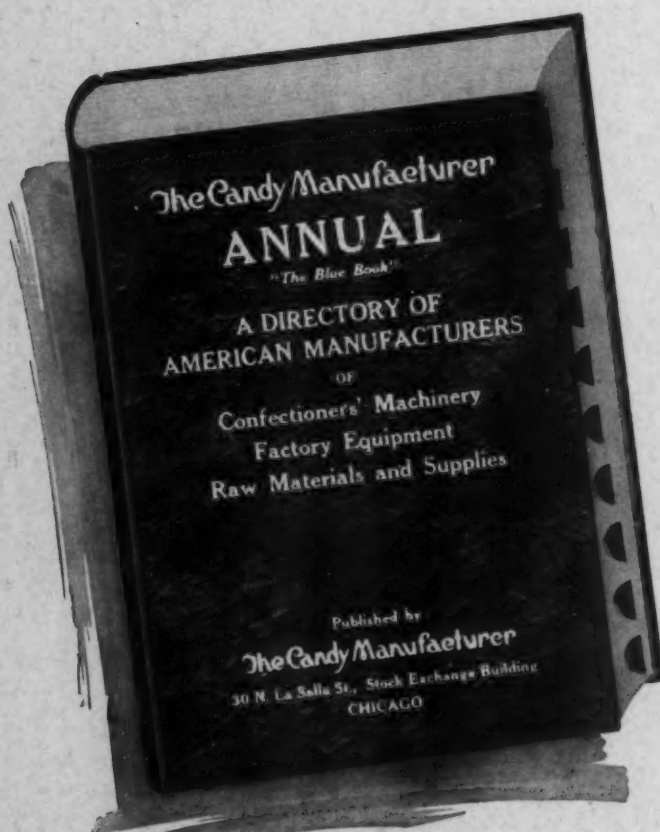
FEER COMPANY

confectionery machinery that pays dividends

Cambridge 39, Boston, Mass.

Where to Buy Confectioners' Supplies and Equipment

While this book is being compiled we would be glad to receive inquiries from our subscribers regarding sources of supply or any problem in purchasing. All information in our Buyer's Directory files is at your disposal.



CONTENTS:

In addition to the Directory feature The Blue Book will contain:

An index of all associations, national, territorial, state and local within the confectionery industry, and the national associations in the allied industries.

Rulings, regulations and legislative situation affecting confectionery supplies and products. Statistical information on the industry. Reports and surveys of special value to the purchasing and sales departments.

A review of books, periodicals and technical literature on candy factory management, methods and materials and the industry in general.

A directory of trade names.

The data for this candy manufacturers' buying guide is being compiled and the book will be issued later in the year. In the meantime our subscribers have access to all information in our directory files. We will be glad to receive your inquiries regarding sources of supply.

The Directory Section

of the Blue Book will contain the following classifications:

Directory of manufacturers of chocolate and candy machinery, refrigerating machinery, factory equipment, tools and utensils.

Directory of manufacturers and importers of confectioner's colors, flavors, essential oils, gums, extracts and essences, gelatines, starch, corn syrup, molasses, honey, milk products and all raw materials.

Directory of manufacturers of chocolate coatings, liquors, and cocoa butter; coconut oils, butters and cocoa butter substitutes.

Directory of brokers and importers in cocoa beans, coconut, fruits, nuts, etc.

Directory of sugar brokers and refiners.

Directory of peanut brokers and growers and manufacturers of peanut machinery.

Directory of manufacturers of paper boxes, fancy, set-up and folding; candy containers—tin, glass, redwood, baskets, leather, etc.

Directory of manufacturers of paper box liners, laces, bonbon cups, seals, trimmings, etc., box papers and box tops.

Directory of manufacturers of box wraps, bar wraps, foils, waxed papers, dipping papers, bags and paper specialties.

Directory of manufacturers of shipping containers: corrugated, solid fibre and wood boxes, and pails.

Directory of lithographers and manufacturers of "Dealer Helps" and advertising specialties, window trims, store signs, display cards, hangers, premiums, souvenirs, etc., etc.

The Candy Manufacturer Publishing Co.

30 N. La Salle St., Stock Exchange Bldg.
CHICAGO

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With the Supply Manufacturers

The Supply Field is so closely and so vitally interested in the healthy development of the confectionery industry that this space is provided for constructive editorials and expressions from the manufacturers of confectioners supplies and equipment—Editor.

The Time to Buy Boxes

by Wm. W. Baird

Secretary National Paper Box Manufacturers' Association

SOMETIMES we hear strong language from users of paper boxes expressing the wish that they "could get along without boxes—they are a nuisance—uneconomic and unnecessary—and when we want them in a hurry we can't get them."

Upon investigation it is invariably found that the last part of the tirade explains the general disgust, "When we want them in a hurry we can't get them."

Notwithstanding frequent experiences of the kind, the box user very often continues to delay placing his order until a seasonal rush overwhelms him, and then he looks to the box manufacturer to do the impossible. Perhaps the box manufacturer is to blame in many instances in not explaining to his customer the necessities and peculiarities of the paper box industry.

Practically all set-up boxes are made "to order." Special papers have to be ordered, special sized sheets of board purchased for large runs in order to save the customer money, special printing plates or engravings have to be prepared, before the box manufacturer begins processing the materials. Even in cases where all engravings are prepared, and the boxes have been frequently made before, it may be that the paper is a special shade and is double coated and highly finished. In the latter case it needs to be stored in the box manufacturer's stockrooms for several weeks before it is in condition to use for engraving, for when the coated surface is not thoroughly dry and "seasoned" it is apt to pick and spoil the appearance of the work even if it is possible to run it at all.

The confectionery manufacturer catering to the package goods trade and other boxed candy trade generally has a slack season beginning in the early summer.

The box manufacturer who takes care of his requirements will be in a better position to serve him promptly and efficiently if his orders for fall business are placed before the summer slack period. Sufficient time will thus be given for ordering all stock, preparing plates and dies, discussing special brands, trade marks, quantities, etc.

The very natural tendency during the past few months has been to hold back on orders; to order for immediate requirements only. Every indication points to continued improvement in industry, and the confectionery industry will surely have an improved fall demand.

In considering immediate purchase of future requirements the following facts are pertinent:

The box manufacturer has taken the loss due to deflation, and has reduced production costs in line with the general trend. Boxboard prices are as low at present as they can reasonably be expected to go. Babson advises buying for future requirements.

The best time to buy boxes is well in advance of requirements, and if the candy manufacturer has not already done so for the fall trade, now is the time to buy boxes.

PURCHASING

Will be the Keynote of the
next issue of this magazine

The Second Annual

Fall Purchasing Number

Issue of September, 1922

The following is a synopsis of a new series of articles on "The Purchasing Department" which will start with the next issue:

1. What to Specify in Ordering Raw Materials.
2. Care of Raw Materials In and Out of Storage.
3. Customers of the Raw Material Trades and Their Relation to the Candy Industry.
4. Maximum Use of the Laboratory in Selecting and Caring for Raw Materials.
5. Fluctuations in the Prices of Basic Raws and Their Effect Upon the Raw Materials Used in Candy.

Written exclusively for *The Candy Manufacturer* by the purchasing agent of one of the foremost manufacturing confectioners in America.

What Is Corn Syrup—What Is Glucose?

An instructive article giving the definitions and composition of the various fundamental sugars, also introducing some facts regarding the nutritional value of corn syrup. The first of a series.

by Dr. William P. Cutler

Secretary American Association of Manufacturers of Products from Corn

IT was well known that the Germans, manufacturing a syrup from potatoes, have throughout all the years called it "potato syrup" and that made from rice had been called "rice syrup."

What Is Glucose

It perhaps will be interesting at this time to discuss more or less extensively the real glu-

cose. Chemistry recognizes the fact that the use of "ose" at the end of a word always indicates that it is some kind of sugar, for example:

The following table illustrates the different fundamental sugars, the commercial and natural sweet products, and the different combinations of the fundamental sugars in these products:

Fundamental Sugars	Commercial Nomenclature of Products	Composition of the Commercial Product
1. Sucrose } Saccharose } $C_{12}H_{22}O_{11}$	Sugar; Cane or Beet Sugar Maple Sugar Maple Syrup Refinery Syrup Molasses } Black Strap } Candies (without Corn Syrup) Some candies, such as creams, have only a small amount of Glucose and Fructose Candies (with Corn Syrup)	Saccharose Saccharose Saccharose, Fructose and Glucose Glucose, Fructose and Saccharose Glucose, Fructose and Saccharose Glucose, Fructose and Saccharose
2. Glucose or } Dextrose } $C_6H_{12}O_6$	Jams, Jellies, Preserves (without Corn Syrup) Jams, Jellies, Preserves (with Corn Syrup) Grape Sugars in Raisins and other fruits Sap of many trees and plants Juice of many fruits Anhydrous Sugar Corn Syrup 70 and 80 Sugar Refinery Syrup } Molasses }	Glucose, Saccharose, Fructose and Dextrine Glucose, Saccharose and Fructose Glucose, Saccharose, Fructose and Dextrine. Glucose Glucose Glucose Glucose Glucose, Dextrine and Maltose Glucose and Dextrine Glucose, Saccharose and Fructose
3. Fructose } or Levulose } $C_6H_{12}O_6$	Invert Sugar Honey	Glucose and Fructose Glucose and Fructose
4. Lactose $C_{12}H_{22}O_{11}$	Milk Sugar	Lactose
5. Maltose $C_{12}H_{22}O_{11}$	Malt Syrup } Malt Extract }	Maltose, Glucose and Fructose

It will be noticed that glucose is found in all but cane sugar, beet sugar, maple sugar and milk sugar, and the last four sugars are split into glucose by the process of digestion.

Where the Mischief Started

When a distinguished chemist discovered that by the use of heat, moisture and acid together, a syrup could be made from starch whether it be potato, corn or rice—and on chemical analyses found glucose present—for the want of a better name, he called the product "glucose."

In the years following, when this syrup from corn starch was put upon the market commercially, and the process was very much improved

and it was known that it was a very useful and economical food, many complications arose in the minds of the consumer over the word "glucose" and many suspected that it was derived from glue, and therefore refused to use it.

The manufacturers, recognizing that this was an unfair handicap and that, as Dr. A. P. Bryant explains in an article on Corn Syrup in the January, 1922, issue of this magazine, glucose was only a part of this product and as the law required that no product composed of more than one ingredient could be named for any one ingredient, sought a name which would the better and more honestly describe this wholesome, necessary and easily digested food. Hence the name "Corn Syrup."

In order that the name might be given legal standing the matter was presented to the three secretaries who were in office at that time, with the following results:

"LABELING OF CORN SYRUP

"Washington, D. C., February 13, 1908.

"We have each given careful consideration to the labeling, under the pure food law, of the thick viscous syrup obtained by the incomplete hydrolysis of the starch of corn, and composed essentially of dextrose, maltose and dextrine.

"In our opinion it is lawful to label this syrup as 'Corn Syrup'; and if to the corn syrup there is added a small percentage of refiner's syrup, a product of the cane, the mixture in our judgment is not misbranded if labeled 'Corn Syrup with Cane Flavor.'

"GEORGE B. CORTELYOU,
Secretary of the Treasury;

"JAMES WILSON,
Secretary of Agriculture;

"OSCAR S. STRAUS,
Secretary of Commerce and Labor."

Thus settling the matter for all time.

It will also be observed here in the accompanying table that glucose is very widely found in nature, in the sap of trees and juices of many fruits—and nature never makes a mistake.

Glucose—the Blood Sugar

Glucose is the sugar of the blood. All other sugars in order to be properly assimilated have to be, commercially or by digestion, converted into glucose, or what is known by the physician as d-glucose, or dextrose-glucose.

Let me emphasize again: All starches by digestion are converted first into maltose, thence into dextrose-glucose, before they can become a part of the blood stream. Dextrose-glucose in the blood stream furnishes heat and energy, necessary to sustain the body and keep the body warm. Without dextrose-glucose a man would be unable to work and he would freeze to death.

To more clearly understand the value of corn syrup as a food, composed as it is of dextrine, maltose and glucose, I append hereto a table which illustrates the elementary substances of which all foods are composed and their particular functions in the work of construction and nutrition of the human or animal body:

1. Protein produces Heat, Energy, Tissue, Muscle and probably Fat.
2. Fat produces Heat, Energy and Fat
3. Carbohydrates, Sugars, etc., produce Heat, Energy and Fat
4. Mineral Matters produce Bone Structure and the salts of the liquid portion of the body.

The elemental substances of which corn syrup is composed belong to the third class—the carbohydrates, which are more largely

present than the other classes in all foods, which, as I explained above, produce especially the heat and energy necessary for life and to a lesser extent the fat of the body.

It is customary to estimate the value of the different carbohydrates by the calorific power. The results are expressed as calories, an index of the amount of heat produced by their oxidation on burning in the human body. The calories of all these substances (sugar, dextrine and starch) are very nearly the same. Those of cane sugar and maltose are somewhat higher than glucose, it is true, but as cane sugar and maltose must be changed into glucose before they can enter the blood stream, an equivalent of heat units is required for this conversion—so that the final calorific value of all sugars and carbohydrates is practically the same.

A Creed

I believe in the goods I am handing out, and in my ability to get results. I believe that honest goods can be passed out to honest men by honest methods. I believe in working, not weeping; in boosting, not knocking; and in the pleasure of my job. I believe that a man gets what he goes after, that one deed done today is worth two deeds tomorrow, and that no man is down and out until he has lost faith in himself. I believe in today and the work I am doing; in tomorrow and the work I hope to do, and in the sure reward which the future holds. I believe in courtesy, in kindness, in generosity, in good cheer, in friendship, and in honest competition. I believe there is something to be done, somewhere, for every man ready to do it. I believe I'm ready—RIGHT NOW.—An American Bible.

HE KNEW 'EM

"Do you know any of the jury?"
Witness—"Yes, I know more than half of them. In fact, I'm willing to swear I know more than all of them put together."

I AM CARELESSNESS

I am more powerful than the combined armies of the world.

I have destroyed more men than all the wars of the nations.

I am more deadly than bullets, and I have wrecked more homes than the mightiest of siege guns.

I steal, in the United States alone, over \$300,000,000 each year.

I spare no one, and I find my victims among the rich and poor alike, the young and old, the strong and weak. Widows and orphans know me.

I loom up to such proportions that I cash my shadow over every field of labor, from the turning of the grindstone to the moving of every railroad train.

I massacre thousands upon thousands of wage earners a year.

I lurk in unseen places, and do most of my work silently. You are warned against me, but you heed not. I am relentless.

I am everywhere—in the house, on the streets, in the factory, at railroad crossings and on the sea.

I bring sickness, degradation and death, and yet few seek to avoid me.

I destroy, crush or maim; I give nothing, but take all. I am your worst enemy.

I Am Carelessness!

UNIFORMITY of VANILLIN

"FLAKY, white crystals, readily soluble in alcohol and soluble in glycerine. An ash content of not more than 0.05% and a melting point of 81° and over."—this, briefly covers the specifications of VANILLIN-Monsanto.

These specifications may sound uninvolved, but the utmost manufacturing skill is necessary to have each succeeding batch of VANILLIN identical when it is produced on an extensive scale.

Only after years of earnest, scientific effort were we able to accomplish this uniformity in our finished product, which is so highly desirable to the users of this important flavor.

Each lot that is marketed by us must measure up to the exacting standards which we adopted years ago.

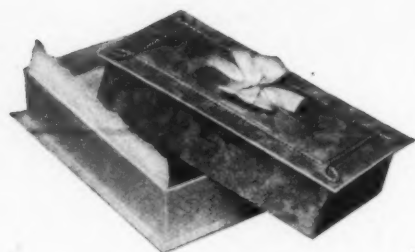
Freedom from off-color (yellow color) and a melting point one full degree above the requirements of the United States Pharmacopoeia assure full strength, highest purity and true flavor.

Monsanto Chemical Works
ST. LOUIS, U.S.A.

Also Manufacturers of
COUMARIN-Monsanto
(The Original American Coumarin)

Stocks of VANILLIN-Monsanto are carried at St. Louis, New York, Chicago, Minneapolis, San Francisco and Los Angeles. Thus VANILLIN-Monsanto at all times is easily available to the consuming trade.

VANILLIN-Monsanto is Uniform!



Is the Box as good as the Candy?

After you have made your candy as good as you can—don't handicap its sale with an unworthy box. Many an otherwise shrewd and thorough-going candy manufacturer is doing just this!

Are you sure your boxes are all they should be—could be?

Ask the SCHULTZ organization to suggest an improvement on them. The result—submitted to you without cost or obligation—may prove a revelation to you.

H. SCHULTZ

Boxes are Trade Magnets

For 65 years it has been our pleasure and our task to supply the demands of a very large number of the country's most exacting and successful candy makers for modernized boxes. We know our business; and we can make that knowledge of prime benefit and value to you. A Schultz designed box will directly increase your sales. Let us prove it. Ask how!



H. SCHULTZ & CO.
CHICAGO'S OLDEST AND
LARGEST MANUFACTURERS
OF PAPER BOXES—

519 to 531
SUPERIOR ST.
CHICAGO

Helping Salesmen Develop Their Territory

by A Sales Manager

IN looking over the United States and counting the number of people and counting the volume of sales per thousand population, we could formerly observe discrepancies. Perhaps in Ohio the people would buy so much per thousand of population, while in Michigan or Kentucky they might buy only half as much per thousand. In using the figures and studying the causes, we were led to believe that the reason lay in the way our salesmen worked.

In earlier days the salesman was given a sample case and a price list; he was told what the boundaries of his territory were and he was expected to do the rest. We noticed that if the salesman did not make good he was replaced with another one. In territories where the salesman had been changed most often the business was worst. The development of sales per thousand of population was the slowest there, and there was a great discrepancy in the opportunity the salesmen had. One salesman had, sometimes, a couple of million people in a territory, and the other one seemed to be chopped out by square miles instead of possibilities of sales. Another salesman might have only two-thirds of the people in his territory and yet we expected him to do the same amount of business.

That resulted in the rearrangement of territory and in splitting it up into so many units. Generally speaking, notwithstanding the discrepancy in the number of people in the territory, it did not seem to make so much difference. There was some difference, but nothing like a proportionate difference between the volume of business done by the little man as compared to the big fellow. That made us consider the amount of work being done in a territory. Give a man a few people to sell to and he would sell to more of them.

So that brought us to the conclusion that there were a great many places we could not successfully send salesmen to because they were too little. Or, if they could go, they could go only once a year. The salesman routing himself generally took the good hotels and the good transportation system, and that led us to think that perhaps our advertising ought to help out the salesmen more. In other words, we were too lopsided. Although we were advertising, there was too much territory in which we were not taking full advantage of the advertising.

The next thing to do was to arrange the routes very carefully for each man, to recognize that there were certain places to which he could be sent but once a year, but to send him there and give a careful report on the situation. Thereafter we decided to use the mails in ordinary circularizing and, getting it down finer still, in classifying the dealers according to the reports and having circular and paragraph letters sent out; so that the advertising began to be used to piece out the work of the man, to save labor, to do by automatic machinery what it would be too expensive and slow and painful for the salesman to do.

We found that the scheme worked. The business per thousand of population could be greatly raised. Take, for example, certain districts in one state. A man had six units at one time and we said, "Here, let's split this right in two and we will make two men work on the same number of people, but we will help them out with some of this trade advertising." Whereas the volume of the whole six territories had been about \$47,000 one year, the following year, with the two men at work, one of those halves produced \$53,000 and the other \$57,000. In other words, the same number of people bought \$110,000 worth instead of \$47,000. Then we further divided that, reduced it to two-thirds, and still we can get, according to each man, just the same amount of business, or approximately the same, that a salesman got out of the larger territory before. By putting in more men we can increase the total volume of sales in the territory. It is like playing baseball. Today the thing can be operated so that you can bat out the fly and have a man under it, whereas according to the way we operated it some years ago, we sent the balls out in one direction and sent the men out in any direction, regardless of the way the publicity was going.

If we find in a certain territory that our business is all coming from the top layer of large towns, we can see that the advertising we need is in the agricultural, small town and local newspapers. We can often get the dealer to use these by furnishing helps and sometimes standing part of the costs. But the classification of the population according to size of towns and according to the small districts that they are in enables us to do what before made our advertising relatively a gamble.

If business was off in one section, we couldn't connect it with the lack of advertising there. We could not make up our minds to do a certain amount of advertising in a certain district and then send the men there prepared to work in a certain way.

By working closer and getting a more exact knowledge of what we are doing, finding out what is producing good results, we are making our sales and advertising work an instrument of precision, something that will reduce the costs of distribution by the simple process of increasing sales.

A Rose Bud

In which a New York Supply Manufacturer Says a Mouthful

New York, June 2nd, 1922.

Mr. Earl R. Allured, c/o The Candy Manufacturer, Stock Exchange Bldg., Chicago, Illinois.

Dear Sir: We note with pleasure the indexed classification of our advertisement appearing in your magazine for May, and we thank you for taking such good care of our announcement.

We believe this May issue is, from cover to cover, quite the handsomest trade magazine that we have ever seen. The typing is very restful to the eye, and each page is so arranged that the whole matter is easily read. We know that you started out to put into the hands of the trade a distinctive publication, but we were not prepared to expect a commercial magazine of this character. When we get through reading it here in the office, we really feel like taking it home and putting it on the library table alongside of the "best sellers." We will be frank and state that we have picked up a great deal of information from your magazine because it was served to us in such a way that we just couldn't help reading it.

The other day we noticed your magazine on the desk of a large candy manufacturer in Brooklyn. We asked him what he thought of it and he pronounced it to be the most valuable trade publication that ever came under his notice.

(Signed) (Name furnished on request.)

P. S.: The Brooklyn candy manufacturer mentioned above is Mr. John Ballweg, president of the Novia Candy Company.





A Chocolate Factory
devoted to the
exclusive manufacture of
High Grade Chocolate
Coatings and Liquors

*Samples and Prices
sent on request*

FORTUNE PRODUCTS CO.
416-22 South Desplaines Street
CHICAGO

Analysis of Edible Gelatin

(Continued from page 21)

required in the determination times the copper value of 1 cc. times 100 divided by the weight of gelatin taken gives the per cent of copper in the gelatin.

Zinc

Zinc most commonly gains access to gelatin from zinc-lined containers or galvanized wire nets. Chemicals containing zinc may also be added. The limit permitted in edible gelatin is 100 parts per million.

The filtrate from the copper sulphide determination above is boiled to expel hydrogen sulphide and evaporated to a volume of 250 cc. A drop of methyl orange and 5 grams of ammonium chloride are added, and the solution made alkaline with ammonium hydroxide. Hydrochloric acid is added until faintly acid, and 10 cc. of 50 per cent ammonium acetate introduced. Hydrogen sulphide is run in until precipitation is complete. The residue is filtered and washed with hydrogen sulphide water. The precipitate is dissolved by pouring dilute (1 to 3) hydrochloric acid through the filter, and the filtrate boiled to expel hydrogen sulphide. It is cooled, an excess of bromine water added, 5 grams of ammonium chloride stirred in, and ammonium hydroxide introduced until the color carried by the bromine disappears. Dilute hydrochloric acid is added to just bring back the bromine color, then 10 cc. of ammonium acetate solution (50 per cent) and 0.5 cc. of ferric chloride solution (10 per cent) or enough to precipitate all of the phosphates.

The solution is boiled, the ferric hydroxide filtered off, and washed with water containing a little ammonium acetate. Hydrogen sulphide is then added to the filtrate until all of the zinc is precipitated. This should be pure white. It is filtered through a Gooch crucible and washed with hydrogen sulphide water containing a little ammonium nitrate. The crucible is dried in an oven, ignited at a bright red heat, cooled and weighed as zinc oxide (ZnO). The weight of zinc oxide times 0.8034 times 100 divided by the weight of the gelatin sample gives the per cent of zinc in the gelatin.

Sulphur Dioxide

Sulphur dioxide is often added to gelatins for three distinct purposes. It may be added to neutralize the lime, to bleach the solution, or as a germicide. It has been found to be injurious to the normal processes of digestion when present in more than very small amounts and is therefore restricted in its use. Many manufacturers do not use it at all, and others eliminate it by the addition of hydrogen peroxide or other chemicals in the plant.

Twenty-seven and a half grams of gelatin are weighed into a distilling flask, and 300 cc. of water and 5 grams of phosphoric acid are added. Carbon dioxide is passed through the flask until the air has been expelled, and the

gelatin is dissolved by placing the flask in hot water. After solution, the flask is connected to a receiver, heated over a flame, with a constant flow of carbon dioxide, and 200 cc. distilled over into a flask containing 25 cc. of N/20 iodine solution. Five cc. of concentrated hydrochloric acid are added to the distillate and the latter concentrated to about 75 cc. It is then filtered, brought to boiling, and 10 cc. of barium chloride solution added. The precipitated barium sulphate is filtered, washed and ignited in the customary way. The weight of the barium sulphate gives directly the per cent of sulphur dioxide (SO_2) in the gelatin if 27.5 grams of the sample are used in the determination.

Bacteriological Examination

The most simple test for the bacterial content of gelatin is merely to make a solution of about 10 per cent and leave it, covered, at room temperature for a few days. A good gelatin will not develop a bad odor or taste for at least 48 hours.

The total bacterial count may best be made as follows: A one-tenth per cent solution is prepared in the usual way, taking especial care to exclude any possible bacterial contamination. All apparatus used must be sterile. A nutrient medium is at hand which is made from 1,000 grams of peptone broth, 80 grams of gelatin and 5 grams of agar. This of course also must be sterile. Nine cc. of the medium and one cc. of the gelatin solution to be examined are mixed in a petri dish, covered, and allowed to stand at room temperature for two days or longer. The colonies are then counted. If the number is too great for an accurate count, a more dilute gelatin solution must be employed. The count is usually expressed as the number of colonies developed per gram of gelatin. Thus if 30 colonies develop from 1 cc. of a 0.1 per cent solution of gelatin, the count is $30 \times 1,000$ or 30,000 per gram.

The details of the test for the particular bacterium *B. Coli* are too involved to describe in this place. In general, however, it may be stated that the *B. Coli* group consists of all non-spore-forming bacilli which ferment lactose with gas formation and grow aerobically on standard solid media. The presence of this organism indicates faecal contamination, and must be absent in edible gelatin.

In American history, July has often proven a turbulent but victorious season. Ticonderoga, Gettysburg, Santiago, and Chateau-Thierry—all were July battles.

This year with a coal and railway war in progress, it is irritating, inconvenient and expensive; but business will survive the ordeal, just as it has hundreds of greater and lesser battles.

Production will be slowed up; deliveries will be delayed. So we say Plan ahead.—Candy News.



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Food Flavors

(Continued from page 26)

tract, and emulsions of lemon oil are all familiar articles of commerce.

Imitation lemon flavors consist chiefly of solutions or emulsions of citral obtained from lemon grass oil described below. Lemon oil has been found adulterated with turpentine, terpenes obtained as a by-product in the manufacture of terpeneless oils of lemon and of orange, and with citral obtained from lemon grass oil.

Lemon Grass Oil

Lemon grass oil: Lemon grass is a perennial tufted grass with long, coarse leaves. It is cultivated chiefly in the Travancore Province and Madras Presidency of India and the Island of Ceylon. The U. S. Department of Agriculture has cultivated the grass in central Florida and has experimented with 13 varieties secured from eight different parts of the world. It seems possible to produce lemon grass oil commercially in the United States, in those localities which possess the proper climatic requirements.

Lemon grass is cultivated for the essential oil, lemon grass oil, obtained by distilling the grass tops, which are cut and tied in bundles for this purpose. Variable yields of the oil are reported, varying from a few tenths of a per cent to 2 per cent or more based on the green weight of material. The value of the oil depends upon its high content of citral, which varies from about 68 to 85 per cent.

Citral is an aldehyde, and is obtained chiefly from lemon grass oil. It has a lemon-like odor which, however, is coarser than the odor of lemon oil, and is widely used in the manufacture of imitation lemon flavors and in the manufacture of ionone, an imitation violent perfume. Lemon grass oil is used to flavor soap. Adulterations of lemon grass oil with petroleum, cocoanut oil, acetone, and citronella oil have been reported.

Oil of Limes

The lime tree grows in the same regions as the orange and is cultivated especially in the West Indies, Italy and Florida. It may be mentioned that lime juice, which is even sourer than lemon juice, is a highly valued ingredient of some ginger ales. However, we are more particularly interested at this time in the essential oil, of which there are three commercial varieties, the hand pressed Italian oil, and the distilled and hand pressed West Indian oils. The essential oil is contained in cells in the rind and in this respect resembles oils of lemon and orange. The distilled oil, which is obtained as a by-product by distillation during the concentration of lime juice, contains from 1 to 2 per cent of aldehydes, including citral. Hand pressed white West Indian limes oil contains 6 to 9 per cent of citral. Lemon oil and ter-



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penes are reported as adulterants of limes oil. This desirable essential oil is used to flavor hard candies and other confectionery and is an ingredient of beverage flavors, including ginger ale.

Licorice

Licorice (glycyrrhiza): The licorice plant is a perennial herb, the dried rhizome and roots of which are known in commerce as Spanish, Russian, and Asiatic licorice. Millions of pounds of licorice root are exported to the United States from Turkey and Russia. The plant is cultivated also in Spain, Italy, Greece, China, Turkestan, and Persia, and can be grown in the United States.

An important constituent of licorice root is glycyrrhizin, a sweet substance which gelatinizes when a concentrated solution of it in boiling water is cooled. Glycyrrhizin forms a compound with ammonia, and in the manufacture of the fluid extract ammonia water is employed. The fluid extract is used as a vehicle in medicinal preparations and is an ingredient of some beverage flavors and confectionery.

Lovage

Lovage: Lovage is a perennial herb extensively cultivated in the south of Europe for its aromatic roots and fruit. An essential oil is obtained by distilling the roots, the yield being under 1 per cent. The fresh herb and the fruit also contain an essential oil. Oil of lovage has an odor of angelica and is an ingredient of some imitation maple flavors and beverage flavors. The constituents of the oil have not been identified with the exception of terpineol, a terpene alcohol.

(To be continued)

If a new phase of your business presents itself, weigh it most carefully, survey all angles, and, if you think it is practical and honorable, adopt it! Give it an impartial trial. Be sure you have your conscience present at the adoption.

Waste not your time in idealizing. Every minute belongs to your business. Good, practical, common sense! If you have not this important attribute you cannot give a cogent reason for staying in business.

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In a questionable transaction Sammy gave Ikey a check for \$100. But the check came back to Ikey marked "No funds." Ikey hurried to Sammy with the bad check.

"Vat kind uv bizness is dis?" demanded Ikey, flourishing the check.

"Vat's de matter mit it?" asked Sammy.

"Vell, can't you see? Look at it, ain't it marked 'No funds?'"

"Vell, vell," said Sammy, "dot's a hell us a bank, ain't it!"—Forbes Magazine.

**"Purchasing" will be the
keynote of the next issue—
the September number of
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The Sugar Situation



by Dwight O. Palmer

SINCE our last review the sugar market has again advanced to a new high level for the year of 5.36c duty paid for raws and 7c less 2 per cent for refined.

Following the Independence Day holidays the market immediately firmed up with heavy purchases of raw sugars at advancing prices and then eased off, taking a spurt again on July 17th inspired by the estimate of the U. S. beet crop, published by the U. S. Department of Agriculture, of 586,000 long tons against last year's crop of 911,190 tons, and the price of 3 $\frac{3}{4}$ c C & F (5.36c duty paid) for Cuban raws was first paid on July 20th for second half August and first half September shipment sugars. The market, however, eased off later and was not firmly established at the level of 5.36c duty paid until July 25th, when this price was paid for sugars in prompt and August shipment positions, at which price the market remained firm but quiet for the balance of the month, with a very gradual easing tendency, until at present writing raw sugars are available at 5.36c duty paid for shipment and 5.31c duty paid from store, and possibly a fraction less if substantial buying interest would appear.

Since the price of raw sugar was firmly established at 5.36c d. p. there has been a gradual change taking place in sentiment and opinion as to the future course of sugar and prices for the remainder of the year. Of course, those who now claim that the price of sugar has reached its highest warranted by conditions, and that there are more than sufficient supplies for the balance of the year, are in the minority, but theirs is an unbiased, clear analysis and opinion of the sugar situation.

We will mention the important features of the situation that tend to change the complexion of the outlook.

The above mentioned estimate of the U. S. beet crop is regarded by

experienced sugar minds as being too low, a crop nearer 700,000 tons being looked for, notwithstanding continued private advices from the West indicating a lower yield than the Department of Agriculture's estimate. The bullish influence of this published low estimate was short lived, having been used immediately by sellers and buyers and forced another advance, and we use the word "force" in its proper sense here, as not every advance in price has been warranted by prevailing conditions and these unnatural advances have partly influenced opinion against further rises in price. The United States beet estimate was discounted in a short time, partly before it was published, and was shortly absorbed in the voluminous world figures of available sugar supplies.

Supplies available for the entire world for the balance of the year has been a subject of much discussion and speculation during the past few weeks. This, however, is second in importance to the interest shown in available supplies for the United States alone, which is of more immediate concern to the United States users of sugar. Many theories and compilations of statistics have been advanced by those interested in higher prices to show barely enough sugar for the country's needs this year, if not an actual shortage of supplies. While the statistical position of sugar has developed considerable strength during recent months, conditions of supply and demand change with time and warrant taking time for a calm consideration of facts and figures at frequent intervals, thereby giving open minds, if broad enough, an opportunity to change position. Statistical computations are made with various production, stock or consumption figures as a unit basis and may or may not be correct and they inspire confidence only when nearest an accurate and conservative use of figures. There is one set of recent figures that ought to set at rest any fears of a shortage this year. These

are given by Messrs. Willett & Gray and are impartial in their analysis. This authority states that this calculation is made from a conservative and unbiased standpoint and that it shows there is plenty of sugar in sight to care for the country's needs until new crops are available, even at the high rate of consumption, which is not liable to continue owing to the higher price of the article. This calculation is dated July 27th, 1922:

	Tons
Stocks of raws.....	304,000
Afloats	156,000
Stock in Cuba plus additional production of Centrals still grinding.....	1,125,000
Porto Rico	115,000
Hawaii	185,000
Philippines	35,000
Balance of beet crop.....	50,000
	<hr/> 1,970,000

This quantity is available for the next five months' consumption without considering the sugars obtainable from new beet and cane crops, which will be at least 400,000 tons and in addition thereto some new crop Cubas and Porto Ricos possibly will be available.

So much for this estimate, which the writer believes to be more accurate than any other advanced to date.

There must also be considered the features of consumption during the later months of the year as against the first six to seven months. As to the United States: Eastern cane refiners are still three to six weeks delayed or oversold, and it may be conservatively estimated that these refiners have 4/500,000 tons on their books still to be delivered. This sugar will, in a large way, meet the demand for fall sugars. This delivery being so far delayed that at 7c buyers are not keen for further large purchases. There is also a point where stocks begin to accumulate and this may be reached now. The rail and coal strikes may affect later to some extent, but to date little

attention has been given to them. Canada has already reached the point where domestic demand is off and some cancellations are coming in and Canadian refiners are free sellers of granulated for export at lower prices than prevail in the United States. The export demand for granulated is at a standstill, with every indication that this business is about finished for the year in a large way, due to the nearness of the European beet crop, estimated at 600,000 tons more than last year, and availability of sugars from other countries as well as unsold American and Canadian granulated continually offering for resale in European markets at under the market in America. Europe has not been stampeded into buying heavily in the American markets. European buyers have been reluctant to follow the rapid advances here. No doubt depreciation in foreign exchanges has had much to do with this. Buying at present and in the immediate future will be confined to those countries enjoying favorable exchange rates, viz., England (at present well stocked), Scandinavian countries (maximum needed 20,000 tons), and possibly some Mediterranean countries in a small way.

In Cuba there are twelve Centrals still grinding, which, it is estimated, will eventually bring the crop to over four million tons. If price remains favorable to Cuba these Centrals, or part of them, may not shut down at all and others may commence the new crop in November.

Looking over the situation as a whole, we see no cause for anxiety on the part of buyers. Supplies are sufficient and present level of prices is fully as high as natural conditions warrant and the balance of the year should see a steady to easing market. If any further material advance in price takes place it will be based upon events unforeseen at present or manipulation.

DWIGHT O. PALMER.

August 1st, 1922.

The New York Sugar Market

August 1st, 1922.

The raw sugar market has been very quiet for four days, following heavy purchases by refiners at the top prices for the year. The market was well cleared at that time so that no large quantity has been pressing for sale since, but the quantity available at last prices runs well up to 150,000 bags, mainly Cubas for August shipments at 33½¢ C & F as well as Cubas from store at 5.31¢ duty paid delivered, but buyers are showing no in-

Imported Nut Situation

At this writing we have cables from abroad wherein the Jordan shippers notify us that they are not quite ready to quote the prices on new crop Jordan and Valencia almonds. We understand, however, that the market will open shortly, probably in the next ten days.

Collective information from the growing almond and walnut districts shows that very abundant crops will be available this year. New crop shelled walnuts will be in good supply on their arrival here in about mid-December. There are always a few hundred cases that are shipped in before the bulk shipments are sent over, and they command a special price, but they do not represent the market, and, no doubt, it will be the 15th of December, or thereabouts, before there is any volume of new walnuts from the other side. In the meantime, we have short stocks of fancy walnuts against the demand which will cover the next four months, before the new crop is available, which means that the walnuts are firm today with a decided upward tendency. There are some weak holders who will be forced to liquidate. We understand that there are no more Chaberte walnuts in France and the bulk of the genuine Bordeaux goods are on this side of the water, being carried in cold storage for consumption before the new crop. There will be very little holdover of old crop goods on this side and we understand there are none on the other side.

With regard to Roumanian walnuts, we hear there are still large parcels of these goods in France which may be used for misbranding purposes, but action has already been taken to protect both the French shipper and the American importer against any concerns in France who operate in misbranding walnuts. The protective measures which will be adopted by the shippers here will be outlined in this column at a later date.

The market is quiet, as should be expected at this time of the year, and beyond the fact already mentioned that there are indications that the coming fall crop of shelled nuts will be a large one, there is nothing of further interest to report at this time.

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*Next issue will be the
Fall Purchasing Number*



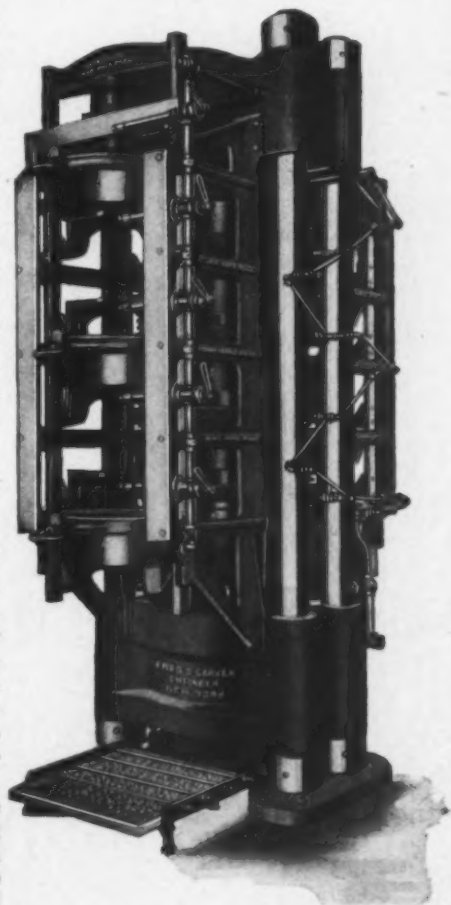
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terest. Some of the offerings have been withdrawn by reason of no sales being possible. The British market is also quiet, with raws offering at last prices, viz., basis 19/7½d. C. I. F. per cwt. The tendency is easy and favors buyers.

The export refined market continues very quiet. August shipment sugars are available at 4.85/4.90c F. A. S. from second hands only. September shipment sugars are obtainable from refiners at 5.10c F. A. S., but few sales have been made at this price, buyers generally considering it too high for the position as likely demand. American and Canadian granulated arrived in Europe, afloat and for shipment is offering daily at prices under those above quoted.

Domestic refined remains quiet at 6.90/7c less 2 per cent. There is no demand at 7c and is very light at 6.90c. Refiners are 3/6 weeks oversold and buyers are using best endeavors to obtain shipment of sugars already purchased, although with the easing market tendency, buyers may not be quite as anxious for sugars to be shipped. The position of refiners is a firm one and prices are not expected to be reduced under present conditions even though raws decline.

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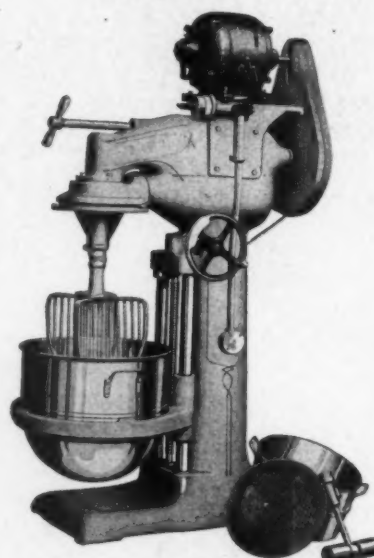
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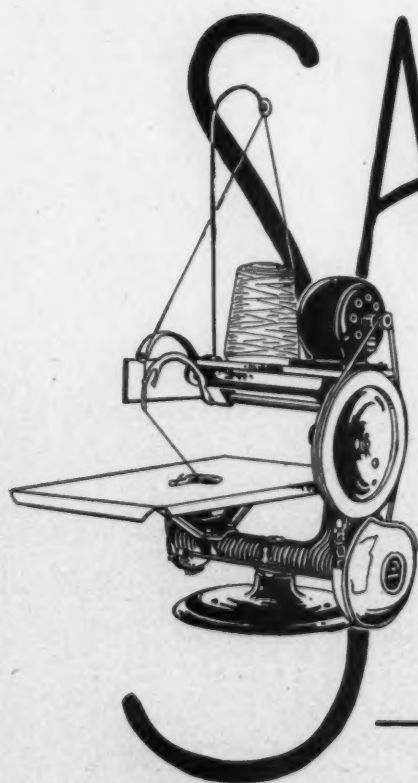
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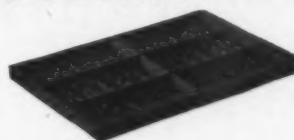
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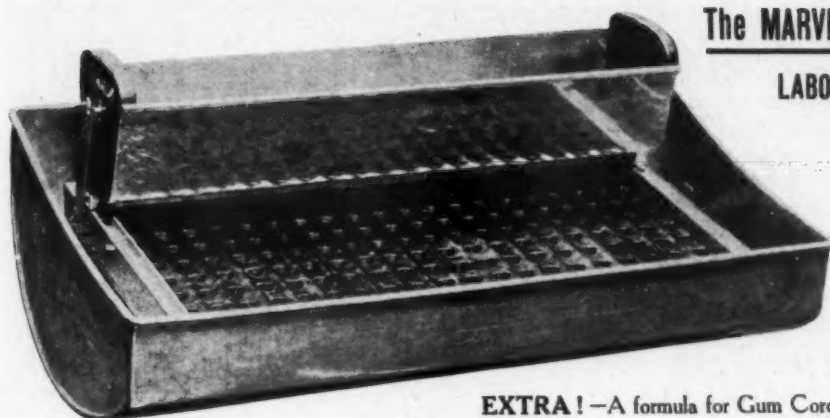
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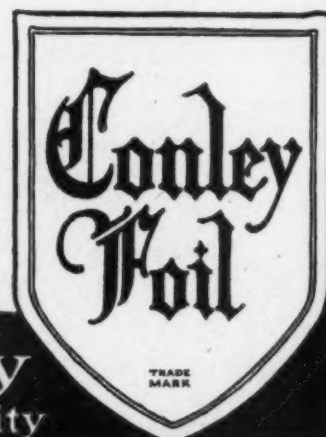
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ADVERTISERS' INDEX

	PAGE		PAGE
American Coconut Butter Company.....	15	Kay-White Products, Inc.....	47
American Maize Products Company.....	52	Marcone & Company.....	49
American Sugar Refining Company.....	48	Milligan & Higgins Gelatine Company.....	51
Amora Laboratories.....	38	Mills & Brother, Inc., Thos.....	8
Atlantic Gelatine Company.....	37	Monsanto Chemical Company.....	34
Baker & Company, Ltd., Walter.....	44	Murphy Laboratories, Frederic W.....	44
Baker Ice Machine Company.....	45	National Bundle Tyer Company.....	48
Ball Cream Beater Company, The....	Back Cover	National Can Company.....	45
Bendix Paper Company.....	52	National Equipment Company.....	7
Bosshard, Theo.....	51	National Seal Company.....	11
Bucyrus Copper Kettle Works.....	45	Nucoa Butter Company, The.....	10
Bush & Company, Inc., W. J.....	50	Nulomoline Company, The.....	49
Carver, Fred S.....	41	Palmer, Dwight O.....	49
Clinton Corn Syrup Refining Company.....	43	Read Machinery Company.....	46
Conley Foil Company.....	52	Schultz & Company, H.....	34
Devine & Company, J. P.....	12	Schwartz Laboratories.....	51
Duche & Sons, T. M.....	43	Sinclair, Harold A.....	Second Cover
Eppelsheimer & Company.....	49	Special Machine Company.....	13
Essex Gelatine Company.....	39	Spencer Importing Company.....	50
Fleisher & Co., W. L.....	9	Stollwerck Chocolate Company.....	18
Foote & Jenks.....	45	Sturtevant Company, B. F.....	9
Fortune Products Company.....	36	Thurston & Braidich.....	44
Franklin Sugar Refining Company.....	46	Ungerer & Company.....	16
Fries & Bros., Alex.....	47	United Chemical & Organic Company, The...	14
Greer Company, J. W.....	28-29	United States Gelatine Company.....	27
Haehnlen, L. S.....	42	Upressit Products Corporation.....	47
Haug & Co.....	42	Vacuum Candy Machinery Company.....	4
Hudson Manufacturing Company, The	Third Cover	Want Ads.....	53
Improved Appliance Co.....	44	Warfield Chocolate Company, The.....	42
India Refining Company.....	6	Whitten Company, J. O.....	50
Katzinger Company, Edward.....	47		

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AGE

47
49
51
8
34
44
48
45
7
11
10
49
49
46
34
51
ver
13
50
18
9
44
16
14
27
47
4
53
42
50

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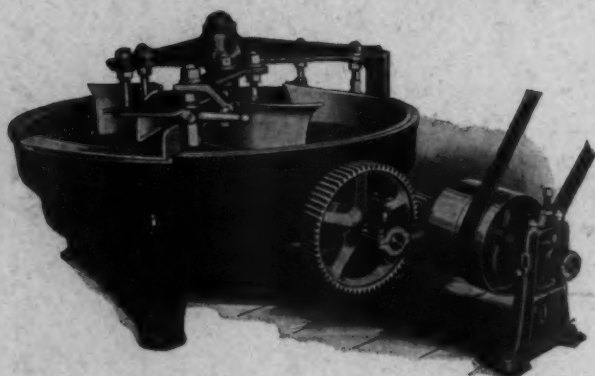
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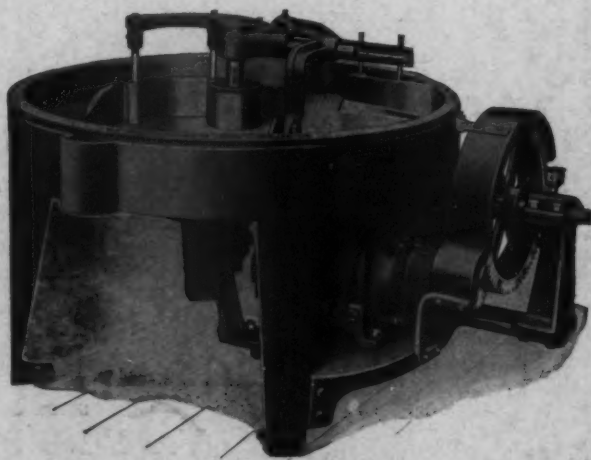
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